SULFUR AND NITROGEN EMISSIONS TAX ACT OF 1987

HEARING

BEFORE THE

COMMITTEE ON WAYS AND MEANS
HOUSE OF REPRESENTATIVES

ONE HUNDREDTH CONGRESS

FIRST SESSION

ON

H.R. 2497

SULFUR AND NITROGEN EMISSIONS TAX ACT OF 1987

SEPTEMBER 9, 1987

Serial 100-41

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SULFUR AND NITROGEN EMISSIONS TAX ACT OF 1987

WEDNESDAY, SEPTEMBER 9, 1987

U.S. House of Representatives,
Committee on Ways and Means,
Washington, DC.

The committee met, pursuant to call, at 10 a.m., in room 1100, Longworth House Office Building, Hon. Dan Rostenkowski (chairman of the committee) presiding.

[The press release announcing the hearing and H.R. 2497, follow:]

FOR IMMEDIATE RELEASE
TUESDAY, AUGUST 4, 1987

PRESS RELEASE #16
COMMITTEE ON WAYS AND MEANS
U.S. HOUSE OF REPRESENTATIVES
1102 LONGWORTH HOUSE OFFICE
BUILDING
WASHINGTON, D.C. 20515
TELEPHONE: (202) 225-3627

THE HONORABLE DAN ROSTENKOWSKI (D., ILL.), CHAIRMAN, COMMITTEE ON WAYS AND MEANS, U.S. HOUSE OF REPRESENTATIVES, ANNOUNCES A HEARING ON H.R. 2497, THE "SULFUR AND NITROGEN EMISSIONS TAX ACT OF 1987"

The Honorable Dan Rostenkowski (D., Ill.), Chairman, Committee on Ways and Means, U.S. House of Representatives, today announced a public hearing on H.R. 2497, the Sulfur and Nitrogen Emissions Tax Act of 1987, introduced by Congressman Judd Gregg (R., N.H.) and cosponsored by Congressmen Fortney H. (Pete) Stark (D., Calif.), Thomas J. Downey (D., N.Y.), and Bill Frenzel (R., Minn.), Members of the Committee. The hearing will be held on Wednesday, September 9, 1987, at 10:00 a.m. in room 1100 in the Longworth House Office Building.

H.R. 2497 would establish a new tax on sulfur dioxide and nitrogen oxide emissions to finance a trust fund aimed at reducing the air pollutants that precede the formation of acid rain. The bill would impose a tax on large steam-generating boilers and furnaces of up to 45-cents per pound of sulfur dioxide and nitrogen oxide emissions. This sulfur and nitrogen emissions (SANE) tax would be progressive so that those facilities producing the greatest rate of emissions per million British thermal units (Btu's) would pay the greatest amount of tax. Beginning in 1989, the tax would be phased in over three years, with the rates adjusted for inflation after 1990. A 25-percent investment tax credit would be allowed for the cost of certain pollution control equipment spread over a 10-year period.

Revenues from the tax would be deposited in a new SANE trust fund. The SANE trust fund would be available to assist taxpayers in reducing taxable emissions.

The Treasury Department is expected to be the first witness, followed by public witnesses.

DETAILS FOR SUBMISSION OF REQUESTS TO BE HEARD:

Individuals and organizations interested in presenting oral testimony to be heard before the Committee must submit their requests in writing no later than Monday, August 31, 1987, to Robert J. Leonard, Chief Counsel, Committee on Ways and Means, U.S. House of Representatives, 1102 Longworth House Office Building, Washington, D.C. 20515. As soon as possible after the filing deadline, the Committee staff will notify by telephone those scheduled to appear. Any questions concerning a scheduled appearance should be directed to Committee staff at [(202) 225-3627].

It is urged that persons and organizations having a common position make every effort to designate one spokesperson to represent them in order for the Committee to hear as many points of view as possible. Time for oral presentations will be strictly limited with the understanding that a more detailed statement may be included in the printed record of the hearing, (See formatting requirements below.) This process will afford more time for members to question witnesses. In addition, witnesses may be grouped as panelists with strict time limitations for each panelist.

In order to assure the most productive use of the limited amount of time available to question hearing witnesses, all witnesses scheduled to appear before the Committee are required to submit 200 copies of their prepared statements to the Committee office, room 1102 Longworth House Office Building, at least 24 hours in advance of their scheduled appearance. Failure to comply with this requirement may result in the witness being denied the opportunity to testify in person.

WRITTEN STATEMENTS IN LIEU OF PERSONAL APPEARANCE:

Persons submitting written statements for the printed record of the hearing should submit at least six (6) copies by the close of business, Wednesday, September 23, 1987, to Robert J. Leonard, Chief Counsel, Committee on Ways and Means, U.S. House of Representatives, 1102 Longworth House Office Building, Washington, D.C. 20515. If those filing written statements for the record of the printed hearing wish to have their statements distributed to the press and the interested public, they may provide 100 additional copies for this purpose to the Committee office, room 1102 Longworth House Office Building, before the hearing begins.

COMMITTEE ON WAYS AND MEANS FORMATTING REQUIREMENTS FOR PRINTING OF HEARING STATEMENTS, WRITTEN COMMENTS AND EXHIBITS

Each statement presented for printing to the Committee by a witness, any written statement or exhibit submitted for the printed record or any written comments in response to a request for written comments must conform to the guidelines listed below. Any statement or exhibit not in compliance with these guidelines will **not** be printed, but will be maintained in the Committee files for review and use by the Committee.

1. All statements and any accompanying exhibits for printing must be typed in single space on legal-size paper and may not exceed a total of 10 pages.
2. Copies of whole documents submitted as exhibit material will not be accepted for printing. Instead, exhibit material should be referenced and quoted or paraphrased. All exhibit material not meeting these specifications will be maintained in the Committee files for review and use by the Committee.
3. Statements must contain the name and capacity in which the witness will appear or, for written comments, the name and capacity of the person submitting the statement, as well as any clients or persons, or any organization for whom the witness appears or for whom the statement is submitted.
4. A supplemental sheet must accompany each statement listing the name, full address, a telephone number where the witness or the designated representative may be reached and a topical outline or summary of the comments and recommendations in the full statement. This supplemental sheet will not be included in the printed record.

The above restrictions and limitations apply only to material being submitted for printing. Statements and exhibits or supplementary material submitted solely for distribution to the Members, the press and public during the course of a public hearing, may be submitted in other forms.

I

100TH CONGRESS
1ST SESSION

H. R. 2497

To amend the Internal Revenue Code of 1986 to impose an excise tax on the emission from certain boilers of sulfur dioxide or nitrogen oxides and to create a trust fund for revenues from such tax.

IN THE HOUSE OF REPRESENTATIVES

MAY 21, 1987

Mr. GREGG (for himself, Mr. DOWNEY of New York, Mr. FRENZEL, and Mr. JEFFORDS) introduced the following bill; which was referred to the Committee on Ways and Means

SEPTEMBER 9, 1987

Additional sponsors: Mr. STARK and Mr. DONNELLY

A BILL

To amend the Internal Revenue Code of 1986 to impose an excise tax on the emission from certain boilers of sulfur dioxide or nitrogen oxides and to create a trust fund for revenues from such tax.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Sulfur and Nitrogen Emissions Tax Act of 1987".

SEC. 2. EXCISE TAX ON EMISSIONS FROM CERTAIN BOILERS.

(a) In General.—Subtitle E of the Internal Revenue Code of 1986 is amended by adding at the end thereof the following new chapter:

"CHAPTER 54—EMISSIONS FROM CERTAIN BOILERS

"Sec. 5881. Imposition of tax.
"Sec. 5882. Definitions.
"Sec. 5883. Exemptions and special rules.
"Sec. 5884. Credit against tax for cost of pollution control equipment.

"SEC. 5881. IMPOSITION OF TAX.

"(a) General Rule.—There is hereby imposed a tax on the emission into the atmosphere of any targeted pollutant from any taxable boiler.

"(b) Amount of Tax.—

"(1) In general.—The amount of the tax imposed by subsection (a) is the rate (determined in accordance with the following tables) for each pound of targeted pollutant emitted into the atmosphere from the boiler for each 1,000,000 Btu's produced by the boiler.

"(A) Sulfur dioxide emissions.—In the case of sulfur dioxide—

If the pounds per million Btu's are:	The rate per pound is:
At least 0.6 but less than 1.2	15 cents
At least 1.2 but less than 2.0	30 cents
At least 2.0	45 cents.

"(B) NITROGEN OXIDE EMISSIONS.—In the case of nitrogen oxides—

If the pounds per million Btu's are:	The rate per pound is:
At least 0.4 but less than 0.7	10 cents
At least 0.7 but less than 1.4	25 cents
At least 1.4	45 cents.

"(C) DETERMINATION OF EMISSIONS RATE.—For purposes of this chapter, the amount of targeted pollutants produced per million Btu's shall be determined on an hourly basis.

"(2) PHASE-IN OF RATES OF TAX.—In the case of any calendar year before 1991, the tax imposed by subsection (a) shall be the applicable percentage (determined in accordance with the following table) of the tax which would (but for this paragraph) be imposed.

In the case of calendar year:	The applicable percentage is:
1989	25
1990	50.

"(3) RATES AFTER 1990 ADJUSTED FOR INFLATION.—

"(A) IN GENERAL.—In the case of any targeted pollutant emitted during any calendar year after 1990, the amount of the tax imposed by subsection (a) with respect to such pollutant shall be the amount determined under paragraph (1) increased by the cost-of-living adjustment for such calendar year.

"(B) Cost-of-living adjustment.—For purposes of subparagraph (A), the cost-of-living adjustment for any calendar year is the cost-of-living adjustment under section 1(f)(3) for such calendar year but determined by substituting '1989' for '1987' in subparagraph (B) thereof.

"(C) Rounding.—If any increase determined under subparagraph (A) is not a multiple of 1 cent, such increase shall be rounded to the nearest multiple of 1 cent (or, if such increase is a multiple of ½ of 1 cent, such increase shall be increased to the next higher multiple of 1 cent).

"(c) Liability for Tax.—The tax imposed by subsection (a) shall be paid by the person owning or operating the taxable boiler which emitted the targeted pollutants on which such tax is imposed.

"SEC. 5882. DEFINITIONS.

"For purposes of this chapter—

"(1) Targeted pollutants.—The term 'targeted pollutants' means sulfur dioxide and nitrogen oxides.

"(2) Taxable boiler.—The term 'taxable boiler' means any boiler or furnace—

"(A) which is used in the process of burning a fossil fuel for the purposes of producing steam, and

"(B) which is located in the United States (within the meaning of section 4662(a)).

"(3) FOSSIL FUEL.—The term 'fossil fuel' means natural gas, petroleum, coal (including lignite), and any fuel derived from any of the foregoing.

"SEC. 5883. EXEMPTIONS AND SPECIAL RULES.

"(a) EXEMPTION FOR SMALL BOILERS.—No tax shall be imposed by section 5881 on the emissions from any boiler if such boiler has a heat input rate of not more than 100,000,000 Btu's per hour.

"(b) EXEMPTION FOR CERTAIN LARGER BOILERS.—No tax shall be imposed by section 5881 on the emissions from any boiler for any period if—

"(1) such boiler has a heat input rate of more than 100,000,000 Btu's per hour but not more than 250,000,000 Btu's per hour, and

"(2) the average hourly rate of each targeted pollutant emitted into the atmosphere from such boiler during such period does not exceed 1.2 pounds per million Btu's.

"(c) EMISSIONS DETERMINED BY QUALIFIED CONTINUOUS EMISSIONS MONITORING DEVICE.—

"(1) IN GENERAL.—Except as provided in paragraph (2), the amount of targeted pollutants emitted from any taxable boiler shall be determined by use of a qualified continuous emissions monitoring device.

"(2) ELECTION TO USE FUEL ANALYSIS FOR DETERMINATION OF EXEMPTION FOR CERTAIN LARGER BOILERS.—At the election of the taxpayer, the determination of whether the requirements of subsection (b)(2) are met for any boiler for any period shall be made on the basis of an analysis (determined under regulations prescribed by the Secretary) of the fuel used in such boiler during such period.

"(d) TREATMENT OF BOILERS WITHOUT QUALIFIED CONTINUOUS EMISSIONS MONITORING DEVICES.—

"(1) IN GENERAL.—In the case of a taxable boiler which is not monitored by a qualified continuous emissions monitoring device during any period—

"(A) such boiler shall be treated as emitting into the atmosphere a number of pounds of sulfur dioxide and nitrogen oxides determined by the Secretary on the basis of an analysis of the fuel used in such boiler during such period, and

"(B) the rate of the tax imposed by section 5881 shall be 50 cents per pound.

"(2) MONITORING DEVICES WHICH BECOME INOPERATIVE.—

"(A) IN GENERAL.—If—

"(i) a qualified continuous emissions monitoring device becomes inoperative through no fault of the owner or operator of the boiler, and

"(ii) such device was continuously operative during the 90-day period ending on the day before the day on which such device became inoperative,

then, for the 1st 30 days after such device becomes inoperative, paragraph (1) shall be applied by substituting an amount equal to 125 percent of the average number of pounds per million Btu's of each targeted pollutant emitted from such boiler during such 90-day period for the number of pounds of such pollutant determined under paragraph (1)(A).

"(B) INOPERATIVE DEVICE.—For purposes of subparagraph (A), a device shall be treated as becoming inoperative if such device ceases to be a qualified continuous emissions monitoring device.

"(3) QUALIFIED CONTINUOUS EMISSIONS MONITORING DEVICE.—For purposes of this section, the term 'qualified continuous emissions monitoring device' means any device—

"(A) which is designed to measure the amount of targeted pollutants emitted into the atmosphere from a taxable boiler per million Btu's produced by such boiler, and

"(B) which meets the performance and quality standards (if any) which have been prescribed by the Secretary by regulations.

"(4) EXCEPTION FOR CERTAIN BOILERS.—Paragraph (1) shall not apply to any boiler to which—

"(A) subsection (a) applies, or

"(B) an election under subsection (c)(2) applies.

"(e) MORE THAN 1 BOILER MONITORED BY SINGLE DEVICE.—All boilers which are monitored by 1 qualified continuous emissions monitoring device shall be treated for purposes of this chapter as 1 boiler.

"(f) DISPOSITION OF REVENUES FROM PUERTO RICO AND THE VIRGIN ISLANDS.—The provisions of subsections (a)(3) and (b)(3) of section 7652 shall not apply to any tax imposed by section 5881.

"(g) REGULATIONS.—The Secretary shall prescribe such regulations as may be necessary or appropriate to carry out the purposes of this chapter. To the extent not inconsistent with the purposes of this chapter, such regulations shall be consistent with the regulations under the Clean Air Act with respect to taxable boilers for which performance standards are applicable under section 111 of such Act.

"SEC. 5884. CREDIT AGAINST TAX FOR COST OF POLLUTION CONTROL EQUIPMENT.

"(a) In General.—There shall be allowed as a credit against the tax imposed by section 5881 for any calendar quarter an amount equal to 25 percent of the deemed depreciation for such quarter on qualified pollution control equipment of the taxpayer.

"(b) Deemed Depreciation.—

"(1) In general.—For purposes of subsection (a), the deemed depreciation for any calendar quarter is an amount equal to ¼ the annual depreciation which would be allowable if the qualified pollution control equipment of the taxpayer were depreciated ratably over a 10-year period (without regard to salvage value) beginning with the 1st day of the calendar quarter during which the equipment was placed in service.

"(2) Property placed in service before January 1, 1988.—In the case of property placed in service before January 1, 1988, no credit shall be allowed under subsection (a) for any deemed depreciation before such date.

"(c) QUALIFIED POLLUTION CONTROL EQUIPMENT.—For purposes of this section, the term 'qualified pollution control equipment' means property of a character subject to the allowance for depreciation—

"(1) which is used to abate or control atmospheric pollution or contamination by a taxable boiler by removing, altering, disposing, storing, or preventing the creation or emission of targeted pollutants and other pollutants, contaminants, or wastes, and

"(2) which is part of a facility with respect to which the requirements of subparagraphs (A), (B), and (C) of section 169(d)(1) are met."

(b) DEDUCTIBILITY OF EMISSIONS TAX.—The first sentence of section 164(a) of such Code (relating to deductions for taxes) is amended by inserting after the last paragraph the following new paragraph:

"(7) The tax imposed by section 5881 on emissions from certain boilers."

(c) CLERICAL AMENDMENT.—The table of chapters for subtitle E of such Code is amended by adding at the end thereof the following new item:

"Chapter 54. Emissions from certain boilers."

(d) EFFECTIVE DATE.—The amendments made by this section shall take effect on January 1, 1989.

SEC. 3. ESTABLISHMENT OF SANE TRUST FUND.

(a) IN GENERAL.—Subchapter A of chapter 98 of the Internal Revenue Code of 1986 (relating to trust fund code) is amended by adding at the end thereof the following new section:

"SEC. 9510. SULFUR AND NITROGEN EMISSIONS TRUST FUND.

"(a) CREATION OF TRUST FUND.—There is established in the Treasury of the United States a trust fund to be known as the 'Sulfur and Nitrogen Emissions Trust Fund' (hereinafter in the section referred to as the 'SANE Trust Fund), consisting of such amounts as may be appropriated or credited to such Trust Fund as provided in this section or section 9602(b).

"(b) TRANSFERS TO TRUST FUND.—There are hereby appropriated to the SANE Trust Fund amounts equivalent to the taxes received under section 5881 (relating to emissions from certain boilers).

"(c) EXPENDITURES FROM TRUST FUND.—Amounts in the SANE Trust Fund shall be available, as provided in appropriation Acts, only for making expenditures—

"(1) to make funds available to assist taxpayers subject to the tax imposed by chapter 54 in reducing the emission of sulfur dioxide and nitrogen oxides into the atmosphere, and

"(2) for the payment of all expenses of administration incurred by the Department of the Treasury in administering chapter 54 (relating to tax on emissions from certain boilers).

"(d) BORROWING AUTHORITY.—

"(1) IN GENERAL.—There are authorized to be appropriated to the SANE Trust Fund, as repayable advances, such sums as may be necessary to carry out the purposes of such Trust Fund.

"(2) LIMITATION ON AMOUNT OUTSTANDING.—The maximum aggregate amount of repayable advances to the SANE Trust Fund which is outstanding at any one time shall not exceed $2,000,000,000.

"(3) REPAYMENT OF ADVANCES.—

"(A) IN GENERAL.—Advances made to the SANE Trust Fund shall be repaid, and interest on such advances shall be paid, to the general fund of the Treasury when the Secretary determines that moneys are available for such purposes in such Fund.

"(B) FINAL REPAYMENT.—No advance shall be made to the SANE Trust Fund after December 31, 1990, and all advances to such Fund shall be repaid on or before such date.

"(C) RATE OF INTEREST.—Interest on advances made pursuant to this subsection shall be—

"(i) at a rate determined by the Secretary (at the close of the calendar month preceding the month in which the advance is made) to be equal to the current average market yield on outstanding marketable obligations of the United States with remaining periods to maturity comparable to the anticipated period during which the advance will be outstanding, and

"(ii) compounded annually."

(b) CLERICAL AMENDMENT.—The table of sections for such subchapter A is amended by adding at the end thereof the following new item:

"Sec. 9510. Sulfur and Nitrogen Emissions Trust Fund."

Chairman **Rostenkowski**. The committee will come to order.

Good morning, ladies and gentlemen.

This morning the Committee on Ways and Means is holding a public hearing on H.R. 2497, the Sulfur and Nitrogen Emissions Tax Act of 1987, which was introduced by Congressman Gregg and cosponsored by Congressmen Stark, Downey and Frenzel.

H.R. 2497 would establish a new tax on sulfur dioxide and nitrogen oxide emissions to finance a trust fund aimed at reducing the air pollutants that precede the formation of acid rain. Revenues from the tax would be deposited in a new trust fund which would assist taxpayers in reducing taxable emissions.

Acid rain is an important but complex problem which has been under study since 1980 when an interagency task force was created to plan and implement a 10-year program designed to deal with this issue.

Today, the committee will receive testimony to inform us of the nature of this problem, and to suggest ways by which an effective resolution of the problem may be achieved.

This issue is of particular importance to my State of Illinois since the Midwest would be significantly impacted by the proposals we are considering today.

I am happy that the interests of Illinois will be represented today by the testimony of Congressman Bruce as well as John Mead who is representing the Illinois Department of Energy and Natural Resources, Taylor Pensoneau who is representing the Illinois Coal Association; and Richard J. Grant who is representing the Central Illinois Public Service Co.

I am certain that this will be an enlightening hearing and I agree with my colleagues who have introduced this legislation that we must do something about our environment.

Mr. Gregg.

Mr. **Gregg**. Mr. Chairman, I didn't know if the ranking member, Mr. Duncan, had any comments first.

Chairman **Rostenkowski**. Mr. Gregg.

Mr. **Gregg**. I want to thank you for your courtesy in holding hearings on this critical issue, an issue which has unfortunately caused a great deal of controversy and one that unfortunately also has not been adequately addressed, in my opinion, over the last few years.

The acid rain problem is a critical problem for New Hampshire. However, I wish to emphasize that this bill is not limited to addressing that environmental concern. This bill, because of its structure, is aimed at addressing a number of emissions which have a deleterious effect on populations in general.

It includes addressing the acid aerosol issue which has the capability of producing serious health problems. It includes addressing the acid rain issue and addressing the particulate sulfate problem which creates problems with visibility and includes addressing the ozone problem which is damaging crops and forests and is linked to health problems.

The concept behind this proposal is a unique one, one which departs from the traditional approach to environmental control, that of regulatory action, and goes with an economic incentive.

By using a penalty tax which is tied to a progressive basis of the amount of pollution emitted, it allows various industries to have more flexibility in bringing into compliance those industries and their pollution and thus allows those industries to move forward under their own processes rather than being directed through the regulatory process.

It is therefore an approach which I think has a lot of merit. It also is an approach which has taken into consideration the fact that it will create an economic impact in the areas which will most often have to respond to it. The tax has a 25-percent tax credit included in it which is an offset credit which allows companies which respond effectively to controlling their sulfur and nitrogen emissions to receive the credit even if they have taken that action prior to the tax being put in place. Therefore, it rewards those companies which are responsible and have been responsible prior to the date of enactment of the bill.

The concept of an economic approach is, in my opinion, appropriate at this time because it is fairly clear that the regulatory approach is not going anywhere. That is for a number of reasons, but it is primarily because the committee of jurisdiction on the regulatory side has decided to stonewall the issue of acid rain legislation, ozone legislation, and acid aerosol legislation.

The economic approach also of its own has a lot of viability. It impacts polluters in a direct relationship to the magnitude of their pollution and rewards those who act responsibly to reduce their emissions or who have done so in the past. It balances the needs of various industries in geographic regions, provides individual businesses with a degree of flexibility to determine their cost-effective course of action, and provides powerful incentives for the most expeditious reductions to be achievable.

This bill, as the last point, allows for an economic incentive to generate action faster than a regulatory incentive by causing people to take action in emission control on a quicker time frame than they would under regulatory action.

In addition, I don't think that today we should be getting into the major battle which has evolved over the years over the question of whether or not acid rain is a problem. There is unquestionable research and information which shows that it is a problem. As I have mentioned earlier, this legislation not only covers the acid rain issue, but the acidic aerosols and ozone and the visibility issue, all of which add up to major health problems and have been clearly shown to create significant pollutions which need to be corrected.

There is, of course, the question of competitiveness which is an issue which we should be addressing. I would say on this issue initially—I am sure there will be much testimony on this issue—that our trading partners who have been successful in trading against us, specifically Japan and West Germany, have already taken significant action in the area of controlling these emissions while some of our trading partners who have been less successful, such as Britain, have not. Therefore, it does not appear that competitiveness is a function of controlling these emissions.

I thank the chairman for putting these hearings together because I feel there is a critical issue and I thank the committee for being willing to take up the issue.

[The statement of Mr. Gregg follows:]

STATEMENT OF HON. JUDD GREGG ON H.R. 2497, TO ESTABLISH THE SULFUR AND NITROGEN EMISSION (SANE) TAX

I appreciate the Chairman's decision to hold this hearing and allow consideration of H.R. 2497, the legislative vehicle which my colleagues and I have proposed to address some of our nation's most pressing health and environmental problems - those resulting from high atmospheric concentrations of sulfur and nitrogen oxides. In addition to being serious problems themselves, they are direct or indirect causes of many other deleterious effects, some of which result in significant physical and economic losses in areas far removed from the emitting sources. Among the undesirable products resulting from these pollutants are: Acid aerosols, which are capable of producing serious health problems; acid rain, which kills sensitive lakes, reduces the value of forest resources and results in considerable damage to buildings and metal structures; particulate sulfates, which greatly reduce visibility; and ozone, which damages crops and forests and is also linked to numerous health problems. Although there is frequently a mistaken perception that sulfur and nitrogen oxide emissions are problems for the northeast and the mid-west, the truth is that they are very much national in scope; and they need to be addressed by federal action on a nationwide basis.

Unlike most previous environmental legislation, H.R. 2497 utilizes a progressive schedule of emissions taxes, designated as the Sulfur and Nitrogen Emission, or SANE, tax to establish economic incentives for operators of electric utilities and large industrial boilers to reduce their output of sulfur and nitrogen oxides. Although the SANE tax would be levied on total annual emissions, the rate of taxation is established on the basis of emission rates. A zero tax bracket is established for those sources which have installed effective emission controls and meet the new source performance standards of the Clean Air Act; thus, those operating in the most environmentally responsible manner would incur no tax liability. Other sources which emit at higher rates would be taxed at higher rates, with the highest tax of 45 cents per pound of pollutant levied on those whose emission rates are above 2.0 lbs of sulfur dioxide per million BTUs and 1.4 lbs of nitrogen oxides per million BTUs. By invoking such a progressive rate structure, a strong incentive is provided for polluters to do everything feasible to reduce their emissions as quickly as possible, even if they are not able to meet some arbitrary goal. This is exactly the opposite of the behavior engendered by regulatory approaches where no credit is given for partial reductions and no penalty is applied during the phase-in period normally provided to allow polluters time to comply with the mandated reductions. Thus, the emissions taxes should produce benefits for the environment on a much faster time scale than regulations.

The tax approach should also be preferable to regulations from the standpoint of the affected industries. Regulations require the same level of performance from all emitters, regardless of their specific circumstances and equipment limitations. Thus, it is not uncommon for a company to find that it could make very significant improvements in its emission levels for relatively small costs, whereas the cost of total compliance with a regulation may be very high. These additional emission reductions are often clearly not cost-effective and not in the best interests of either the company or the general public. Our emissions tax structure would allow those who are best able to evaluate the individual situations, the affected businesses themselves, to make the judgements as to cost-effectiveness and prevent the expenditure of large sums for essentially unproductive emission controls.

For those companies which need to make material modifications to their facilities to accomplish the desired emission reductions, and to foster the use of technology which would encourage the maintenance of the current balance of regional coal markets, several provisions are included to reward those who make major capital expenditures for pollution abatement equipment. Companies with SANE tax liabilities may receive a 25% offset credit, based on their qualifying expenditures. Prospectively, for purposes of the credit, the equipment will be treated as being depreciated linearly over a ten year period, with the credit equal to 25% of the amount depreciated annually. For equipment purchased prior to enactment, the credit will equal 25% of the amount which would have been eligible if the SANE tax had been in effect at the time of purchase. This prevents penalizing those companies which acted responsibly without the threat of the SANE tax.

H.R. 2497 also provides for the establishment of a trust fund which would receive the revenues generated by this tax. Although it is not within the scope of this legislation, I would hope that these funds would be made available only for purposes related to reducing emissions and, particularly, to the affected industries in the form of partially forgivable loans to provide further incentive for the greatest and most expeditious reductions.

In examining this legislation, I hope we can concentrate on the relative merits of economic incentives versus regulatory controls and on the appropriateness of the specific provisions incorporated in H.R. 2497. Although the concept of economic incentives is not new, I recognize that many of the specific approaches we have taken in crafting this bill are new and untested. We have done our best to design a tax structure which:

- Impacts polluters in direct relation to the magnitude of their pollution,
- rewards those who act responsibly to reduce their emissions, or have done so in the past,
- balances environmental and health concerns with economic and business realities,
- balances the needs of various industries and geographic regions,
- provides individual businesses with flexibility to determine their most cost-effective course of action -- something that cannot be achieved with global regulations and,
- provides powerful incentives for the most expeditious reductions achievable.

While I believe very strongly that this legislation takes the proper approach, I will be among the first to admit that we lack thorough understanding and expertise in the industries and processes we attempt to deal with. For this reason, we have solicited comments and suggestions from many of those most likely to be affected by the SANE tax. Unfortunately, many of those whom we contacted failed to respond with constructive criticism or suggestions for improvements. It is my hope that this hearing will evoke a more productive response. For my part, I am certainly willing and anxious to accommodate suggestions for modifications which could make this approach more effective, economically efficient or appropriate.

Having stated what I hope this hearing can accomplish, let me also add my hope that we will not allow our focus to be diverted onto spurious issues, such as the interminable debate over the causes of acid rain and the need for more information and research, or the potential effects of pollution abatement costs on international competition. These are truly diversionary and do not deserve further airing in this forum. The case for reducing emissions of sulfur and nitrogen oxides is clearly established by virtually any rational scientific or economic analysis. The health, aesthetic and environmental benefits of lowered atmospheric concentrations of these pollutants are manifold, and by no means limited to any connection with the production of acid rain. Recent testimony before this committee has pointed out economic costs directly attributable to these pollutants that are much higher than even the most inflated estimates of the tax liabilities and pollution abatement costs imposed under H.R. 2497. And for those who worry about the competitive effects of pollution control costs (as we all should) I would point out that, in this case, our trading partners have analyzed the situation carefully and have come to the conclusion that a similar level of environmental protection is good business and not anti-competitive. In testimony of this, recent history shows us that countries which impose some of the least restrictive pollution controls are frequently among those with the poorest competitive positions. Conversely, countries, such as Germany and Japan, which are much more effective competitors than we might prefer, have enacted strong environmental protections, particularly with regard to sulfur dioxide emissions, with no loss of competitive position. Clearly, it is possible, and even common, to compete effectively in the international marketplace while also acting in an environmentally responsible manner.

In summary, I believe that the Committee will find that this is important legislation; important because it offers an opportunity to do something which should be truly effective in mitigating very real health and environmental problems, and important because it opens a new path to more cost-efficient control of a host of environmental, health and safety menaces. In addition, the consideration of this legislation provides a new venue and, thus, a new dynamic for Congressional action on a wide variety of environmental issues.

Again, I commend the Chairman for his decision to bring this legislation before the Committee and I look forward to a very interesting and productive session today.

Chairman **Rostenkowski**. Mr. Duncan?

Mr. **Duncan**. Thank you, Mr. Chairman.

I congratulate my colleague for the leadership he has taken on this bill and this subject and I am glad we are holding the hearing.

I generally support the bill, though not in its present form because I think we have to be careful in looking at the matter of fairness. The amount that would be paid by powerplant owners is not proportional to the amount of sulfur dioxide or nitrogen dioxide emitted from the plants.

For example, if a plant's rate of emission is less than 0.6 of a pound per million Btu's, they will pay no tax regardless of the amount of sulfur dioxide emitted that year.

However, if a plant's rate of emissions is at least 2 pounds per million Btu's, it must pay a 45 cents per pound tax. Coal-fired plants will tend to pay more tax per pound according to the bill than will other powerplants which have lower emissions.

Coal-fired plants located in areas traditionally served by high sulfur coal such as the Ohio Valley, Illinois, Tennessee, Kentucky, and Indiana will tend to pay, under this legislation, a higher tax per pound of sulfur dioxide than will oil-fired plants in either New England or New York. Also there will be a different tax on coal-fired plants located in areas close to low sulfur coal suppliers in Minnesota and the Upper Midwest.

Those are some of the questions that come to me that we must go into. We must see what impact the proposal would have on all of our States, not just a few.

Mr. Chairman, I congratulate you for holding the hearing because I support legislation on this order, but I think it must be fair to everyone.

Thank you.

Chairman **Rostenkowski**. Mr. Schulze.

Mr. **Schulze**. Thank you, Mr. Chairman.

Let me also join the others in commending you for holding this hearing on H.R. 2497 which I perceive to be a complex and controversial proposal.

This bill is first and foremost to this committee a tax bill. It is also an attempt to legislate acid rain controls on our Nation's industry, controls which will have broad consequences for consumers and our competitive abilities.

While acid rain control proposals are primarily the jurisdiction of other congressional committees, I would like to discuss the subject briefly as it relates to the emissions tax issue.

Mr. Chairman, the United States leads the world in reducing sulfur dioxide emissions, the primary target of this bill. Over the past decade, these emissions have been reduced by almost 9 million tons annually, not by production cutbacks, but by the installation of technological equipment.

This country, according to Government figures, now spends over $29 billion each year to protect the air we breathe.

The use of coal has grown dramatically during this same period.

Mr. Chairman, if this bill is designed to persuade our Nation's industry to begin emissions cutbacks, it is too late because they are already well underway.

Are current efforts good enough? No, we know they are not and we must do more.

With regard to acid rain control, the newest, most complete report on this subject, the 1987 National Acid Precipitation Assessment Program Report, was recently issued. The NAPAP program is a Government research program designed to investigate thoroughly the subject of acid rain.

Almost two-thirds complete, the NAPAP shows that there is no reason for environmental panic and that acid rain is not nearly the scourge it was originally painted to be.

From this perspective, the bill seems premature at best.

My major concern with this legislative approach, however, is the overall tax liability called for in the bill.

Taxing emissions may indeed clean our air. How much of a reduction in emissions will occur is unclear and under this proposal, I doubt they could be reduced to such a low level as to eliminate the tax.

The emissions tax would be regressive and would be inequitable, hitting areas of the country hardest which have experienced difficult financial times through most of this decade.

If nothing else, a tax of any kind would be inequitable. Impacts on consumers concern me also.

Industrial, commercial and residential electrical customers will share in this burden.

Growth and productivity could be slowed due to the increased cost of electric power.

An emission tax of this form could impact the ability of our manufacturers to compete in the world market and potentially reduce job opportunities.

How much could H.R. 2497 cost consumers? In 1985, the electric utility industries tax liability would have been increased by about $16 billion. What is even more pertinent is that two thirds of this tax would fall on only 9 of our 50 States with my home State of Pennsylvania being one of those hardest hit.

Mr. Chairman, the tax proposal we will discuss today seems to be a regressive tax ~~which~~ takes the wrong approach to solving a problem toward which we are making progress.

At a time when we are still adjusting to the Tax Reform Act of 1986 such a tax would be bad public policy. As research on acid rain mitigation and vital clean coal technology goes forward, I urge that this committee quickly move on to more germane and feasible tax policy questions before us.

Thank you, Mr. Chairman.

Chairman ROSTENKOWSKI. Do other members have a statement?

If not, the Chair would ask Eugene Steuerle, the Deputy Assistant Secretary for Tax Analysis of the Treasury Department and John M. Campbell, Acting Assistant Administrator for Policy, Planning and Evaluation to take the witness stand.

Welcome, gentlemen.

Mr. Secretary, we would like to start with you.

STATEMENT OF C. EUGENE STEUERLE, DEPUTY ASSISTANT SECRETARY FOR TAX ANALYSIS, U.S. DEPARTMENT OF THE TREASURY

Mr. Steuerle. Thank you, Mr. Chairman.

I will just highlight the major comments in my testimony in order to give Mr. Campbell and the members of the committee more time for their own comments and questions.

I am pleased to have the opportunity to discuss the Treasury Department's views regarding H.R. 2497, the Sulfur and Nitrogen Emissions Tax Act of 1987. We appreciate the concerns of the bill's sponsors with the acid rain problem and applaud their efforts to craft an effective solution. In particular, we recognize the importance of market-oriented approaches as alternatives to tighter regulatory standards which may not be cost effective.

Past efforts of Government and industry have reduced emissions of sulfur dioxide and stabilized emissions of nitrogen oxides. Nevertheless, the administration recognizes that acid rain continues to be an important environmental problem and accordingly has undertaken a comprehensive program to understand better the causes of acid rain, to sponsor innovative control technology, and to review existing regulatory programs.

Because these efforts are currently underway, the administration believes that enactment of a tax on emissions of sulfur dioxide and nitrogen oxides or other tax measures intended to reduce emissions is not justified at this time.

The current status of the administration's efforts to obtain the information that is needed to solve the acid rain problem and the environmental policy implications of the bill will be discussed in the testimony of Mr. John M. Campbell, Acting Assistant Administrator for Policy, Planning, and Evaluation of the Environmental Protection Agency.

My testimony will focus on the tax policy issues raised by H.R. 2497.

Under present law, emissions of sulfur dioxide and nitrogen oxide are not presently taxed. However, excise taxes are imposed on petroleum and certain chemicals (feedstocks) that are believed to cause environmental pollution.

H.R. 2497 would impose an excise tax on emissions into the atmosphere of sulfur dioxide and nitrogen oxide from large steam-generating boilers and furnaces and would provide a credit against such excise tax for 25 percent of the cost of qualified pollution control equipment.

The bill also would establish a trust fund that earmarks the revenues from the excise tax to subsidize certain pollution control devices and pays the expenses of administering the tax and trust fund.

Under economic theory, prices guide efficient resource allocation when the price paid for a particular resource represents its true cost to society. When the prices of resources do not reflect true social cost, resources are not allocated efficiently. For example, in the absence of government intervention, an upstream factory is unlikely to take into account the cost it imposes on a downstream city by dumping pollutants into the river they share. Although the factory uses this resource at zero cost, the city incurs a cost from that usage. As a result, the factory will use too much of this resource from society's point of view.

Because the use of environmental resources, such as water and air remains "outside" the market, the price paid for their use will not reflect their true cost. In the absence of government intervention, such environmental resources are misused because the social cost of pollution is not taken into account in private costs. Economists describe the damage caused as "negative external effects," because the burden of the pollution falls on society rather than on the responsible economic unit.

Because the market system fails to work efficiently when negative external effects are present, most economists would argue that Government intervention in the economy is justified to correct the misallocation of resources by "internalizing" the external costs. A variety of public policy instruments are available for internalizing external costs, including the use of direct controls, taxes, and sales of transferable "pollution rights."

The remainder of my testimony will focus on the two tax policy instruments contained in H.R. 2497: an emissions tax and a tax credit for investments in pollution control equipment.

An emissions tax on pollutants should improve the allocation of resources by making the polluter pay an amount of tax related to the amount of pollution discharged into the atmosphere. Ideally, the amount of additional tax should equal the amount of damage caused by an additional unit of pollution introduced into the environment. Such a tax would establish correct pricing of environmental resources and would bridge the gap between private and social costs.

An emissions tax also would have appeal on certain equity grounds, because firms that do not pollute do not pay the tax and firms that reduce their pollution pay less tax.

A correctly set emissions tax would provide an incentive for a polluter to choose the most cost-effective arrangement of measures for the polluter's particular situation.

If the tax were set at a lower than optimal rate, the amount of pollution control would be too low and the incentive effect of the tax would be inadequate. The polluter, rather than having an incentive to reduce the discharge of pollutants, would buy the right to pollute at too cheap a price. Conversely, if the tax were set at a higher than optimal rate, the incentive to implement pollution control would be too great with the result that an inefficiently large amount of resources would be devoted to pollution control.

Although emissions taxes are compelling in theory, in practice they are difficult to design and monitor. A correctly designed emissions tax would be imposed on each pollution source in relation to the cost that emissions from that source impose on society.

Such fine tuning of an emissions tax is difficult to achieve in practice. In general, it is impossible or impractical to measure external costs with precision, since the full extent of environmental damage from a particular source may not be known or readily quantifiable in dollar terms.

Instead of valuing the environmental harm caused by emissions of sulfur dioxide and nitrogen oxides, the proposed tax would serve the more modest purpose of reducing these emissions by a specified amount, 13 million tons. Selecting an emissions reduction target would not avoid valuation problems, however, because such a target implicitly values the benefits from pollution reduction.

An ideal emissions tax should address many variables that affect the level of environmental damage on the community from the taxed activity. For example, the tax should vary geographically, depending upon the population density and the capacity of the atmosphere to absorb emissions in a particular location which, in turn, depends on such factors as wind speed and temperature.

The proposed emissions tax would be imposed at graduated rates based on the amount of emissions. Thus, tax liability would depend on the amount of emissions, rather than the environmental damage in a particular region. Taxes levied at the State or local level or alternative market-oriented approaches may be more responsive to these regional factors than a Federal tax imposed at a uniform national rate.

Although an ideal emissions tax would be imposed on all pollutants, the proposed emissions tax would only apply to emissions of sulfur dioxide and nitrogen oxides from certain large boilers and furnaces. Other emissions that might harm the environment would be exempt from taxation, as would other sources of the taxed emissions, such as automobiles.

The taxed emissions also could be difficult to monitor. Although the amount of tax generally would be determined through the use of continuous monitoring devices, such devices may not be reliable, particularly if they are used to measure emissions on an hourly basis. If a boiler or furnace does not have such a device, the Treasury Department would determine taxable emissions using fuel analysis. Fuel analysis, involves a knowledge of industrial power supply and pollution control processes and the application of complex mathematical formulas to these processes, which is outside the expertise of the Internal Revenue Service.

Because the proposed tax credit or investment grant would encourage the purchase of pollution control devices, it would not provide an incentive for reducing emissions by changing production processes or switching fuel. Consequently, the tax credit could discourage the use of most cost-efficient ways to reduce emissions.

Moreover, this tax subsidy is not well targeted for cost effectiveness, because it fails to address the fact that a dollar spent to prevent emissions into heavily polluted air has a greater social return than a dollar spent to prevent emissions into less polluted air.

The proposed tax credit also could be criticized on equity grounds, because the polluter is being paid to stop imposing a cost on the rest of society. Income is effectively being redistributed in favor of polluters, which assumes that the polluters have the property right to pollute the air and that society must pay to regain that right.

A possible justification for tax subsidies for pollution control is that they provide transition relief. The proposed tax credit is difficult to justify on that ground.

First, the credit would be permanent.

Second, the bill already would provide transition relief by phasing in the new proposed tax rates over 2 years. If additional relief is desirable, emissions tax could be phased in over a longer time period.

The proposed tax credit also would be difficult for the IRS to administer, because the IRS would be required to identify qualified investment when new plants are built and when old plants are retrofitted.

Earmarking revenues is likely to lead to a misallocation of resources, since funds raised by the emissions tax might not closely match the expenditure needs of the outlay programs especially over the long term.

Moreover, it is inappropriate over the long run to use emissions tax revenues to subsidize the private costs of certain types of pollution abatement, whether the subsidies are paid in cash or are allowed as a credit against the emissions tax. This merely shifts the costs of pollution abatement from the polluters to the public at large.

The emissions excise tax, less the credit for certain pollution control, could raise approximately $27 billion for fiscal years 1988 through 1992. This is a large burden to impose on an industry, consumers, and the economy, while our knowledge about the causes of acid rain and the extent of environmental damage is uncertain.

The administration shares the concern of the bill's sponsors about acid rain and appreciates their important contribution in addressing this issue. The proposals set forth in H.R. 2497 have provided an opportunity for examining the issues associated with designing a tax program for reducing emissions of sulfur dioxide and nitrogen oxides. As the discussion above indicates, a properly structured emissions tax can create an economically efficient incentive to reduce pollution. However, the Treasury Department believes that enactment at this time of additional legislation to address acid rain would be unjustified.

The administration is taking steps to better understand and address this environmental problem so that future actions in this area, whether through direct controls or market-oriented mechanisms, will be appropriate and cost effective. We look forward to working with the Congress to improve the administration's understanding of the causes of acid rain and to develop measures to deal with acid rain, if such measures are determined to be necessary.

Chairman ROSTENKOWSKI. Thank you, Mr. Steuerle.

[The statement of Mr. Steuerle follows:]

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STATEMENT OF
C. EUGENE STEUERLE
DEPUTY ASSISTANT SECRETARY (TAX ANALYSIS)
DEPARTMENT OF THE TREASURY
BEFORE THE
COMMITTEE ON WAYS AND MEANS
U.S. HOUSE OF REPRESENTATIVES

Mr. Chairman and Members of the Committee:

I am pleased to have this opportunity to discuss the Treasury Department's views regarding H.R. 2497, the "Sulfur and Nitrogen Emissions Tax Act of 1987." The intent of this bill is to reduce emissions of sulfur dioxide and nitrogen oxides, which are believed to cause acid rain. We appreciate the concerns of the bill's sponsors with the acid rain problem and applaud their efforts to craft an effective solution. In particular, we recognize the importance of market-oriented approaches to pollution abatement and acknowledge the contribution of the bill's sponsors toward devising a market-oriented approach as an alternative to tighter regulatory standards which may not be cost effective.

Past efforts of government and industry have reduced emissions of sulfur dioxide and stabilized emissions of nitrogen oxides. Nevertheless, the Administration recognizes that acid rain continues to be an important environmental problem and accordingly has undertaken a comprehensive program to understand better the causes of acid rain, to sponsor innovative control technology, and to review existing regulatory programs. Because these efforts are currently underway, the Administration believes that enactment of a tax on emissions of sulfur dioxide and nitrogen oxides or other tax measures intended to reduce emissions is not justified at this time.

The current status of the Administration's efforts to obtain the information that is needed to solve the acid rain problem and the environmental policy implications of the bill will be discussed in the testimony of Mr. John M. Campbell, Acting Assistant Administrator for Policy, Planning, and Evaluation of the Environmental Protection Agency. My testimony will focus on the tax policy issues raised by H.R. 2497.

I. Background

A. Present Law

Environmental Taxes. Emissions of sulfur dioxide and nitrogen oxides are not presently taxed. However, excise taxes are imposed on petroleum and certain chemicals ("feedstocks") that are believed to cause environmental pollution. The petroleum tax rate is 8.2 cents per barrel on domestic crude oil and 11.7 cents per barrel on imported crude oil and petroleum products. An excise tax also is imposed on the sale or use of 42 specified organic or inorganic chemicals. In general, the tax rates vary from $0.22 to $4.87 per ton.

Beginning on January 1, 1989, an excise tax also will be imposed on the sale or use of certain chemical derivatives of taxable chemicals. The tax on these imported chemical derivatives will be the same amount that would be imposed on the taxable chemicals used to produce the derivatives if those chemicals had been sold in the United States for an equivalent use or, if this amount is not known, 5 percent of the customs value of the imported chemical derivatives. The excise tax revenues from the taxes on petroleum, chemical feedstocks, imported chemical derivatives, and the environmental tax (0.12 percent of the excess of a corporation's modified alternative minimum taxable income over $2 million) are deposited into the Hazardous Substance Superfund Trust Fund ("Superfund") to pay for the cleanup of hazardous waste sites.

In addition, a tax of 0.1 cent per gallon is imposed on gasoline, diesel fuel, and certain other fuels. The receipts from this tax are deposited into the Underground Storage Tank Trust Fund to pay for the costs incurred by releases of petroleum and natural or synthetic gases that are not covered by Superfund.

Certified Pollution Control Facilities. A rapid write-off is provided for investments in certain pollution control facilities. Taxpayers may amortize the cost of a certified pollution control facility over a 60-month period. However, to the extent that such a facility has a useful life in excess of 15 years, a portion of its cost must be recovered through depreciation over its prescribed recovery period. A certified pollution control facility is a treatment facility used in connection with a plant or other property that was in operation before January 1, 1976, to abate or control water or air pollution or contamination by one of several means. The facility must be certified by the appropriate state and Federal authorities as meeting certain pollution control standards, and must not significantly increase the output or capacity, extend the life, reduce the operating costs, or alter the manufacturing or production process of the plant or other property.

B. Description of Proposal

H.R. 2497 would impose an excise tax on emissions into the atmosphere of sulfur dioxide and nitrogen oxides from large steam-generating boilers and furnaces and would provide a credit against such excise tax for 25 percent of the cost of qualified pollution control equipment. The bill also would establish a trust fund that earmarks the revenues from the excise tax to subsidize certain pollution control devices and pays the expenses of administering the tax and trust fund.

Excise Tax on Emissions. H.R. 2497 would impose an excise tax on the emission of sulfur dioxide and nitrogen oxides from certain boilers or furnaces that are located in the United States and burn fossil fuel to produce steam. The tax rate would vary depending upon the type and rate of emissions. For sulfur dioxide emissions, the rate would increase from 15 cents per pound for emissions between 0.6 pounds and 1.2 pounds per million Btu's to 45 cents per pound for emissions of 2 pounds or greater. For nitrogen oxides emissions, the tax rate would increase from 10 cents per pound for emissions between 0.4 pounds and 0.7 pounds per million Btu's to 45 cents per pound for emissions of 1.4 pounds or greater.

No excise tax would be imposed on the emissions of any boiler or furnace that has a heat input rate of not more than 100 million Btu's per hour. A boiler or furnace also would be exempt if its heat input rate is between 100 million Btu's per hour and 250 million Btu's per hour for the period that the average hourly amount of each taxed substance emitted from such boiler or furnace does not exceed 1.2 pounds per million Btu's.

In order to determine the amount of taxable emissions, sulfur dioxide and nitrogen oxides emissions would be assessed on an hourly basis by use of a qualified continuous emissions monitoring device. If a taxable boiler or furnace had a heat input rate of not more than 250 million Btu's per hour, its owner could elect to determine the average hourly rate of sulfur dioxide and nitrogen oxides emitted into the atmosphere on the basis of a fuel analysis. The Secretary of the Treasury would be required to issue regulations describing how to determine the number of pounds of taxable emissions by an analysis of the fuel used in the boiler and would then impose tax at the rate of 50 cents per pound for the period that no qualified monitoring device was in place.

Similarly, if the monitoring device became inoperative through no fault of the owner or operator of the boiler or furnace and if the device had been operating continuously for the previous 90 days, the Secretary would determine taxable emissions. For the first 30 days, the Secretary would determine taxable emissions by multiplying the average amount of emissions for the previous 90 days by 125 percent, and then would impose tax on the emissions at the rate of 50 cents per pound. Thereafter, the amount of taxable emissions would be determined by fuel analysis and taxed at a rate of 50 cents per pound.

The excise tax would take effect on January 1, 1989. The tax rates would be phased in at reduced rates of 25 percent of the applicable rate for 1989 and 50 percent for 1990. Beginning in 1991, the tax rates would be adjusted for inflation occurring after 1989 using the Consumer Price Index for all urban consumers.

Credit Against Tax. The bill would provide a credit against the excise tax in any calendar year quarter in an amount equal to 25 percent of the amount of deemed depreciation for such quarter. The deemed depreciation for any calendar quarter is the amount equal to one-fourth the annual depreciation that would be allowable if the qualified pollution control equipment were depreciated ratably over a ten-year period beginning with the first day of the calendar quarter in which the equipment was placed in service, that is, 2.5 percent per year. For property placed in service prior to January 1, 1988, no credit would be allowed for any deemed depreciation before such date. For example, if the property was placed in service seven years prior to January 1, 1988, the credit amount would equal 25 percent of three-tenths of the cost of the property, rather than the full property cost.

Establishment of the Trust Fund. The bill would establish the Sulfur and Nitrogen Emissions Trust Fund (the Fund) and would transfer revenues to the Fund equal to those raised by the excise taxes on emissions of sulfur dioxide and nitrogen oxides plus repayable advances of such sums from the general fund as are necessary to carry out the purposes of the Fund. Revenues in the Fund would be available to provide subsidies to taxpayers for expenditures that reduce sulfur dioxide and nitrogen oxides emissions and for the payment of expenses incurred by the Treasury Department in administering the Fund.1/

1/ H.R. 2497 does not contain provisions that describe the uses of the excise tax revenues; those provisions are contained in a companion bill, H.R. 2498. Under H.R. 2498 revenues could be used to provide interest-free loans for pollution abatement equipment as an alternative to the tax credit, as well as low-interest loans for certain electric power plants. If certain conditions were met, these loans could be forgiven. Any excess funds in the Fund could be appropriated for clean coal technology research and demonstration projects, energy conservation programs, research programs on the environmental effects of sulfur and nitrogen emissions, programs to mitigate environmental damages related to sulfur and nitrogen emissions, other programs authorized by the Congress related to problems associated with sulfur and nitrogen emissions, alternative energy research and development programs, job retraining programs for workers displaced because of the H.R. 2498, and certain tax-related administrative expenses of the Treasury Department and the Environmental Protection Agency.

II. Discussion

A. Economic Theory

In a market economy, prices play a key role in allocating resources to their most efficient uses. Resources are used in their socially most valuable way because they are allocated to the people and firms who bid the most for them. Prices guide efficient resource allocation when the price paid for a particular resource represents its true cost to society.

When the prices of resources do not reflect true social cost, resources are not allocated efficiently. For example, in the absence of government intervention, an upstream factory is unlikely to take into account the cost it imposes on a downstream city by dumping pollutants into the river they share. Although the factory uses this resource at zero cost, the city incurs a cost from that usage. As a result, the factory will use too much of this resource from society's point of view.

Environmental resources, such as water and air, are common property; it is difficult to assign property rights to water or air or to divide them into marketable units that can be bought and sold. Because the use of environmental resources, such as water and air, remains "outside" the market, the price paid for their use will not reflect their true cost. In the absence of government intervention, such environmental resources are often misused because the social cost of pollution is not taken into account in private costs. Economists describe the damages caused as "negative external effects," because the burden of the pollution falls on society rather than on the responsible economic unit. Negative external effects cause resources to be misallocated so that the total social value of production is less than it would be with efficient resource allocation.

Because the market system fails to work efficiently when negative external effects are present, most economists would argue that government intervention in the economy is justified to correct the misallocation of resources by "internalizing" the external costs. A variety of public policy instruments are available for internalizing external costs, including the use of direct controls, taxes, and sales of transferable "pollution rights."2/ The remainder of my testimony will focus on the two tax policy instruments contained in H.R. 2497: an emissions tax and a tax credit for an investment in pollution control equipment.

B. The Economic Rationale for an Emissions Tax

An emissions tax on pollutants should improve the allocation of resources by making the polluter pay an amount of tax related to the amount of pollution discharged into the atmosphere. Ideally, the amount of additional tax should equal the amount of damage caused by an additional unit of pollution introduced into the environment. Such a tax would establish correct pricing of environmental resources and would bridge the gap between private and social costs. An emissions tax also would have appeal on certain equity grounds, because firms that do not pollute do not pay the tax and firms that reduce their pollution pay less tax.

A correctly set emissions tax would provide an incentive for a polluter to choose the most cost-effective arrangement of measures for the polluter's particular situation. Potential polluters could choose to accept the cost of the tax assessment or explore other production technologies that reduce taxable emissions and cost less. At the margin, polluters would pay a cost exactly equal to the benefit of further reducing pollution.

2/ For a complete discussion of these policy instruments see Council of Economic Advisors, Economic Report of the President, February, 1971, pp. 117-20.

If the tax were set at a lower than optimal rate, the amount of pollution control would be too low and the incentive effect of the tax would be inadequate. The polluter, rather than having an incentive to reduce the discharge of pollutants, would buy the right to pollute at too cheap a price. Conversely, if the tax were set at a higher than optimal rate, the incentive to implement pollution control would be too great, with the result that an inefficiently large amount of resources would be devoted to pollution control. The excess tax would serve the same function as a fine.

C. The Proposed Emissions Tax

Although emissions taxes are compelling in theory, in practice they are difficult to design and monitor. A correctly designed emissions tax would be imposed on each pollution source in relation to the cost that emissions from that source impose on society. Such fine tuning of an emissions tax is difficult to achieve in practice. In general, it is impossible or impractical to measure external costs with precision, since the full extent of environmental damage from a particular source may not be known or readily quantifiable in dollar terms.

Instead of valuing the environmental harm caused by emissions of sulfur dioxide and nitrogen oxides, the proposed tax would serve the more modest purpose of reducing these emissions by a specified amount, 13 million tons. Selecting an emissions reduction target would not avoid valuation problems, however, because such a target implicitly values the benefits from pollution reduction.

An ideal emissions tax should address many variables that affect the level of environmental damage on the community from the taxed activity. For example, the tax should vary geographically, depending upon the population density and the capacity of the atmosphere to absorb emissions in a particular location which, in turn, depends on such factors as wind speed and temperature. The proposed emissions tax would be imposed at graduated rates based on the amount of emissions. Thus, tax liability would depend on the amount of emissions, rather than the environmental damage in a particular region. Taxes levied at the state or local level or alternative market-oriented approaches may be more responsive to these regional factors than a Federal tax imposed at a uniform national rate.

Although an ideal emissions tax would be imposed on all pollutants, the proposed emissions tax would only apply to emissions of sulfur dioxide and nitrogen oxides from certain large boilers and furnaces. Other emissions that might harm the environment, such as particulate matter, would also be exempt from taxation, as would other sources of the taxed emissions, such as automobiles.

The taxed emissions also could be difficult to monitor. Although the amount of tax generally would be determined through the use of continuous monitoring devices, such devices may not be reliable, particularly if they are used to measure emissions on an hourly basis. In addition, if a boiler or furnace does not have a continuous monitoring device, the Treasury Department would be required to determine taxable emissions using fuel analysis. Fuel analysis involves a knowledge of industrial power supply and pollution control processes and the application of complex mathematical formulae to these processes, which is outside the expertise of the Internal Revenue Service (IRS). Moreover, a firm's tax liability could vary widely over time because it would rely heavily on the specific coal sample chosen for analysis. For this same reason, two firms polluting the same amount could face significantly different liabilities.

D. The Proposed Tax Credit

Because the proposed tax credit or "investment grant" would encourage the purchase of pollution control devices, it would not provide an incentive for reducing emissions by changing production processes or switching fuel. Consequently, the tax credit would discourage the use of most cost-efficient ways to reduce emissions. In addition, the credit would not provide an incentive for reducing emissions for investments in pollution control devices that were placed in service before enactment of the credit, even though such investments would be eligible for the credit.

Moreover, this tax subsidy is not well targeted for cost effectiveness, because it fails to address the fact that a dollar spent to prevent emissions into heavily polluted air has a greater social return than a dollar spent to prevent emissions into less polluted air. Finally, a firm would receive a reduced grant from the tax credit to the extent that its credit exceeded its excise tax liability.

The proposed tax credit also could be criticized on equity grounds, because the polluter is being paid to stop imposing a cost on the rest of society. Income is effectively being redistributed in favor of polluters, which assumes that the polluters have the "property right" to pollute the air and that society must pay to regain that right.

A possible justification for tax subsidies for pollution control is that they provide transition relief. The proposed tax credit is difficult to justify on that ground. First, the credit would be permanent. Second, the bill already would provide transition relief by phasing in the new proposed tax rates over two years. If additional relief is desirable, emissions tax could be phased in over a longer time period.

Last year, the Congress completed a comprehensive review of the Internal Revenue Code and decided to repeal the investment tax credit under the Tax Reform Act of 1986. Re-enactment of an investment tax credit for one category of property would encourage other industries to seek tax relief for their investments with alleged social value.

The proposed tax credit also would be difficult for the IRS to administer, because the IRS would be required to identify qualified investment when new plants are built and when old plants are retrofitted. When a new plant is built, identification of the pollution control investment is difficult unless it is a separate device, rather than a built-in part of the plant. When the control device is added as part of the modernization of an older plant, it can be readily identified. However, such devices often are integral to the process to which they are attached or produce at least some product that is an input to the process.

Structuring the incentive as a tax credit rather than as a direct expenditure program also would reduce the Federal government's ability to maintain control over its expenditures. Like direct spending programs, outlays granted through tax subsidies have an effect on the Federal budget. Unlike direct spending programs, however, most tax subsidies are not subject to dollar limits set by the Congress. By using the tax system to grant the subsidy, an outlay program is sheltered from spending limits.

E. The Proposed Trust Fund

The bill would provide that amounts equivalent to the emissions tax revenues be earmarked for expenditures that would help taxpayers reduce emissions of sulfur dioxide and nitrogen oxides into the atmosphere and for the payment of administration expenses of the Treasury Department. Earmarking revenues is likely to lead to a misallocation of resources, since funds raised by the emissions tax might not closely match the expenditure needs of the outlay programs especially over the long term. If sufficient revenues are not raised, the program would be underfunded or would have to receive repayable advances from general revenues. If revenues exceed expenditure commitments, then an incentive would exist to finance additional programs.[3]

Therefore, it is inappropriate over the long-run to use emissions tax revenues to subsidize the private costs of certain types of pollution abatement, whether the subsidies are paid in cash or are allowed as a credit against the emissions tax. This merely shifts the costs of pollution abatement from the polluters to the public at large. If transition relief is believed to be desirable, it should not be permanent.

III. Effect on Budget Receipts

The emissions excise tax could raise approximately $27 billion for fiscal years 1988 through 1992 (see attached table). The tax credit for certain pollution control investments would reduce revenues by approximately $1 billion. The total effect on budget receipts would be approximately $26 billion. This is a large burden to impose on an industry, consumers, and the economy, while our knowledge about the causes of acid rain and the extent of environmental damage is uncertain.

IV. Conclusion

The Administration shares the concern of the bill's sponsors about acid rain and appreciates their important contribution in addressing this issue. The proposals set forth in H.R. 2497 have provided an opportunity for examining the issues associated with designing a tax program for reducing emissions of sulfur dioxide and nitrogen oxides.

As the discussion above indicates, a properly structured emissions tax can create an economically efficient incentive to reduce pollution. However, the Treasury Department believes that enactment at this time of additional legislation to address acid rain would be unjustified. The Administration is taking steps to better understand and address this environmental problem so that future actions in this area, whether through direct controls or market-oriented mechanisms, will be appropriate and cost-effective. We look forward to working with the Congress to improve the Administration's understanding of the causes of acid rain and to develop measures to deal with acid rain, if such measures are determined to be necessary.

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[3] This mismatching would also be a problem with an ideal emissions tax, because it is unlikely that the optimal level of tax would match the optimal level of expenditures.

Attachment

Estimated Effect on Budget Receipts[1]

	Fiscal Year					Total 1988-1992
	1988	1989	1990	1991	1992	
Emissions Excise Tax[2]	0.0	3.1	5.5	8.6	9.6	26.7
Tax Credit for Pollution Control Equipment	0.0	-0.2	-0.3	-0.2	-0.2	-1.0
Total Effect on Receipts[3]	0.0	3.0	5.2	8.3	9.3	25.8

Department of the Treasury
Office of Tax Analysis

September 9, 1987

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[1] Preliminary estimates.

[2] Includes the reduction in income tax liabilities caused by the excise tax.

[3] Details may not add to total because of rounding.

Chairman ROSTENKOWSKI. Mr. Campbell.

STATEMENT OF JOHN M. CAMPBELL, ACTING ASSISTANT ADMINISTRATOR FOR POLICY, PLANNING, AND EVALUATION, U.S. ENVIRONMENTAL PROTECTION AGENCY

Mr. JOHN M. CAMPBELL. Thank you, Mr. Chairman and members of the committee.

My name is John Campbell and I am the Acting Assistant Administrator for Policy, Planning and Evaluation here on behalf of the EPA and am very pleased to be able to discuss this issue with you today.

Rather than go into my testimony in detail, which I have provided in writing, I would like to highlight three basic points that I think pretty much capsulize the EPA's view at this time on H.R. 2497.

The first point is that at this time it is our feeling that it is not appropriate to commit to any further reductions in sulfur and nitrogen dioxide emissions.

We feel this for several reasons. One is the key uncertainties that Mr. Steuerle just referred to. Those uncertainties pertain to not only the effects of acid rain and some of the other direct effects of sulfur and nitrogen dioxide emissions, but also to the relationship between the sources of emissions and the actual receptors, that is, where the damage is actually created.

We have a program in place that Congress authorized in 1980. We have conducted research for the last 8 years spending over $400 million to examine in greater detail the acid rain phenomenon. We expect major results from that research program to come within 2 years.

We will also be issuing an interim assessment within several weeks. In that interim assessment, I believe we will be able to advance our state of knowledge, but will leave several uncertainties yet to be resolved in the remaining couple of years.

Another reason why we believe it is inappropriate at this time to move forward with controls is that they are quite costly. As the EPA has examined the different legislation proposed in Congress, we have considered bills that range from approximately $2.1 to $10 billion per year.

Without some understanding of what the benefits would be to society for proceeding with costs of this nature, we feel it is inappropriate at this time to proceed. This is especially true in light of the fact that we have no reason to believe there is about to be a major disaster or a major environmental upset.

This was one of the major issues that we examined in the early stage of our research.

Another reason why we are reluctant to move at this time is that the administration, under the President's direction, has moved forward to aggressively implement the so-called Drew Lewis report to seek funding for clean coal technology demonstrations in the amount of $2.5 million and to move forward with bilateral consultations with the Canadians.

He has instructed the Vice President's Task Force on Regulatory Relief to examine the regulatory incentives and disincentives to clean coal technology demonstrations.

Finally, I think it is important to note that we have an emission control program in place. That program has succeeded over the last 15 years in reducing sulfur dioxide emissions by 26 percent and has also succeeded in holding constant nitrogen oxide emissions in the period 1980 to 1985.

The second point I would like to make, Mr. Chairman, is that the administration applauds the efforts of your committee to consider legislation which clearly advances the concept of economic efficiency in dealing with environmental problems.

While we do not feel it is appropriate to move forward with this proposal at this time on the grounds that we do not have a sufficient amount of information about the problem, we believe that the emission tax proposed in this legislation is one of two very significant and important ways to consider dealing with environmental problems.

A tax in a pure form is a very efficient means of doing so because what it does is to allow society's resources to be allocated efficiently to their best use such that the maximum benefits are received for the amount that society spends.

In a pure form, taxes accomplish environmental goals when they are set at the social cost of the damages that are caused by emissions. Emitters have the incentive to reduce their emissions if that costs less per ton than the tax. In other words, they would reduce their emissions to the point where doing so further is more expensive than paying the tax.

Another economic efficiency approach that can be undertaken to achieve environmental goals is the issuance of permits or the auction of permits by the Government as is done with mineral leases.

Either of these mechanisms can be economically efficient and the only difference between the two is that in the case of an auction where the permits are auctioned by the Government the public captures the revenue that would be associated with the sale of the permits.

Thus, taxes and permits when auctioned have three desirable effects that economists are attracted to. First, they can address environmental goals.

The second is that resources within society are allocated efficiently and the third is that the public is compensated for emissions that are not reduced.

But permits and taxes as means of accomplishing environmental goals require a substantial amount of information.

This is also true, of course, of the traditional command and control regulatory mechanisms.

One of the two most important pieces of information that needs to be used in setting a tax or in auctioning or allocating permits based on prior emissions is the cost to society from the harm that is caused by pollution. In the case of SO_2 and NO_x, that is an issue that we have not yet resolved.

The second issue is what is the geographic distribution of effects across the country. Here again, this is a subject of our national acid precipitation assessment program, but it is as yet a subject that is not resolved.

The third point that I would like to make is that the tax proposed in the bill by Congressman Gregg differs from a pure tax as I have described it above. I would briefly like to describe how it differs and, in turn what the effects of the bill based on our preliminary analysis would be.

There are three major differences between the bill as proposed and a pure tax. The first is that the tax as proposed is not based on an assessment of the cost of the damages. Instead, it is based on a graduated tax schedule with the minimum rate set at 0.6 pounds per million Btu and no tax assessed below that.

This inherently distorts in effect the efficient allocation concept of the tax as I described it above.

Moreover, it affects the level of revenues and in turn affects the actual behavioral response of those who are the emitters.

The second difference that I think is important to keep in mind is that revenues that go to the trust fund are used to subsidize control technologies rather than being reallocated throughout the economy as would be the case if the tax went into general revenues.

This tends to distort the decisions of emitters in terms of control technologies they use and might lead to over control by some sources or under control by others.

A third difference is that the tax takes effect much too quickly to allow different sources to efficiently respond to the tax in their choice of both kinds of emission controls and the mechanisms that they would be using. Thus, it tends to drive sources to either pay the tax or in turn to substitute low sulfur fuel whenever possible.

EPA has conducted a preliminary assessment of our understanding of the provisions of H.R. 2497. In doing this, I have to caveat my remarks by saying that it is very difficult to predict how individual sources will respond, what the costs of controls will be, and what the actual reductions will be.

But based on our preliminary assessment, we believe that the bill as proposed right now would result in a 10.6 million ton reduction of sulfur dioxide and a 2.4 million ton reduction of nitrogen oxide per year by the year 1995.

This is a reduction below our projected base line for the year 1995.

In turn our 1995 estimated cost of the reductions to the sources would be approximately $3.7 billion per year and that is in addition to a $3.3 billion estimate of the residual tax.

This is for the utility industry only.

We have not assessed the industrial sector in the same manner as of yet. Our analyses of H.R. 2497 and other bills to reduce SO_2 and NO_x are not directly comparable, but nevertheless I think it is important to point out that the bill as proposed would be more expensive than some of the less costly options that have been considered so far by the Congress.

One bill, S. 316, is particularly low in cost. It would cost approximately $2 billion per year, and that would yield a 9-million ton reduction per year.

But I have to caveat this by saying that there are major differences between the Senate bill and between the bill proposed by Congressman Gregg.

First of all, Congressman Gregg's bill would actually reduce more emissions than would have been the case with S. 316.

Second, the public in effect is compensated through the tax in H.R. 2497, but S. 316 contains no comparable measures.

Third, the deviations from the pure tax approach that I mentioned above would also contribute to the additional cost of H.R. 2497.

One reason for providing the subsidies that are proposed in H.R. 2497 is to avoid changes in the distribution of coal mining production and the country.

An efficient bill such as S. 316, which simply allows utilities to choose which is the most efficient means of reduction and does not provide a subsidy for them to choose emission devices such as flue gas desulfurization scrubbers tends to produce a substantial shift in production.

This is not a loss of economic efficiency, but this is a problem the Congress has recognized and attempted to deal with in the past.

Under our estimates of H.R. 2497, there would still be approximately a 75-million ton per year shift in the distribution of production from the generally high sulfur mining States of the Midwest and northern Appalachia into the lower sulfur mining States of Central Appalachia and also the West.

This is approximately 25 million tons less of a shift in the distribution of production than is induced however by S. 316.

Before closing, I would like to briefly mention three implementation issues which we think are problematic in H.R. 2497.

The first is the timing of the bill as I mentioned before. There is a question as to whether monitors would be readily available for both electric utilities and also for the industrial sources that would need them.

A second is that emission monitors would tend to be less accurate for the hourly monitoring and reporting requirements that are suggested by H.R. 2497 than would be the case if they were averaged over a month.

And the third is that the data we currently collect for industrial sources that are smaller than 250 million Btu's would limit our ability to be able to effectively implement the tax.

In conclusion, Mr. Chairman, I would like to say that we support the concepts of economic efficiency that are contained in this bill, but we are not able to support some of the provisions that would in effect distort the efficiency effects nor are we prepared at this time to support a program that would reduce sulfur and nitrogen dioxide emissions given the cost of such emission reductions in light of the benefits as we know them today.

Thank you, Mr. Chairman.

Chairman ROSTENKOWSKI. Thank you, Mr. Campbell.

[The statement of John M. Campbell follows:]

TESTIMONY OF
JOHN M. CAMPBELL
ACTING ASSISTANT ADMINISTRATOR
FOR POLICY, PLANNING, AND EVALUATION
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
COMMITTEE ON WAYS AND MEANS
U. S. HOUSE OF REPRESENTATIVES

SEPTEMBER 9, 1987

Good morning, Mr. Chairman and Members of the Committee. I am John M. Campbell, Acting Assistant Administrator for Policy, Planning, and Evaluation of the U.S. Environmental Protection Agency. Thank you for this opportunity to discuss H.R. 2497.

On behalf of the EPA, I would like to provide some comments on the environmental policy implications of the proposed bill. I am pleased that Gene Steuerle from the Department of the Treasury is here to address the tax implications of the legislation. I would like to begin my testimony with a general discussion of the environmental issues associated with sulfur dioxide and nitrogen oxide emissions. I will then present our comments on the basic approach proposed, and provide results of preliminary analysis of the specific requirements of H.R. 2497 and a companion bill, H.R. 2498.

SO_2 and NO_x are the major precursors of acid rain in North America and that is clearly one of the concerns underlying this bill. The Administration agrees with the sponsors of this bill that acid rain is a serious environmental problem, and we are taking a number of positive steps in response.

Over the past several years, this Administration has substantially accelerated acid rain research to expeditiously resolve the significant scientific uncertainties surrounding the acid rain issue. Specifically, we have implemented studies to help determine the current extent and distribution of acidic surface waters, the rate and magnitude of future acidification and the causes of forest decline. The emphasis of this and other research has been and continues to be the delivery of new increments of results as soon as possible so that research can have a near-term influence on our ability to formulate acid rain policy and goals. Our research effort is now beginning to bear fruit. The incremental answers that we will receive over the next 1 to 2 years should result in major increases in our ability to assess the need for an acid rain control program.

Complementing our research effort, EPA has been working with the states through the State Acid Rain (STAR) Program to assess the potential problems which might arise during the implementation of any necessary acid rain program.

In addition, and running in tandem with our research efforts and our study of implementation issues, the President has set into motion the full implementation of the United States and Canadian Joint Report of the Special Envoys on Acid Rain, including the creation of a commercial control technology demonstration program to accelerate the availability of efficient and less expensive control technologies. This program is meant to focus on a major area of controversy hampering the development of a consensus on the acid rain issue--the high cost of current control technology.

In conjunction with this effort, the Vice President's Task Force on Clean Coal Technology is carrying out a comprehensive review of Federal and State regulatory programs to identify opportunities for addressing environmental concerns and promoting innovative technologies under existing laws. A Bilateral Advisory Consultative Group (BACG) has been established with representatives of the United States and Canadian Governments. This group will ensure that Canadian environmental concerns are understood and factored into our ongoing analysis of acid rain policy options.

Finally, and most important from the standpoint of limiting emissions of acid rain precursors, the EPA has been actively implementing provisions of the Clean Air Act which serve to reduce emissions of pollutants of concern. Examples include our recent revision of the Light and Heavy Duty Truck NO_x standard and our SO_2 proposal for the industrial boiler New Source Performance Standard (NSPS).

This brief summary of our activities illustrates the Administration's sincerity in its efforts to address acid rain. Because acid rain is a complex and serious problem, it requires that we have the necessary scientific understanding to assure that we formulate real and effective solutions. When the fundamental scientific uncertainties are reduced, this Administration will craft and support an appropriate set of measures to solve the acid rain problem. Because that understanding does not yet exist, we believe that any major SO_2 and NO_x control approach such as that envisioned in H.R. 2497 is premature. We therefore encourage the Congress to postpone a decision on creating a new national SO_2 and NO_x control program until it can be based on this sounder scientific foundation.

We are also committed to making environmental control programs as efficient as possible. Over the past two decades we have made major improvements in the quality of the environment, but it is clear that other environmental problems remain to be addressed. In general, the problems which have been brought most effectively under control so far are the more obvious and easily resolved. The environmental problems of the next ten years will become increasingly complex and costly to solve. Thus there is tremendous incentive for increasing efficiency in environmental regulation. EPA's objective is to use economically efficient means to solve the most significant health and environmental risks, within the limits of existing statutory constraints. We are also developing approaches to implementation which achieve environmental goals in the most efficient manner.

When coal or oil is burned, the sulfur contained in the fuel combines with oxygen to form sulfur dioxide gas (SO_2). The level of emissions is largely dependent on the sulfur content of the fuel. The amounts of sulfur contained per unit of coal or oil varies widely across different coal and oil deposits. Oxides of sulfur are also formed as a byproduct of some industrial processes (e.g. primary metal smelting, petroleum refining, etc.). Nitrogen oxide emissions are created by high-temperature processes in air -- lightning striking -- and are byproducts of any fuel combustion. The rate of emissions is mainly determined by the combustion temperature and is, in turn, a function of type of fuel and the design of the boiler or other fuel burning equipment.

Nationwide, emissions of SO_2 were about 20 million tons in 1985. Roughly 2/3 of this came from the boilers of coal-fired electric power plants, with the remainder split between other industrial boilers and industrial processes. A large proportion of the power plant SO_2 emissions are concentrated in the Midwest due to its population, industrial capacity, and the higher sulfur content of locally available coal. NO_x emissions are more evenly distributed across types of sources and locations. Of the 1985 national total of 20 million tons, roughly 45% came from mobile sources, 34% from electric power plants, and 21% from all other sources.

Historically, emissions of SO_2 and NO_x gases from large sources or concentrations of sources created local concentrations sufficiently high and prolonged to harm human health and welfare in the immediate vicinities of the emissions. This led to an early emphasis in the nation's air pollution control programs on establishing and achieving ambient air quality standards for these directly emitted pollutants. This has been a major focus of programs under the Clean Air Act for more than two decades and has resulted in dramatic improvements. Ambient air quality standards have been established based on rigorous review of scientific information on health and environmental effects.

The existing standards have been largely achieved throughout the country. The control programs put in place to meet these goals have been the most important cause of a major reduction in national SO_2 emissions. Between 1970 and 1985, national SO_2 emissions were reduced by more than 26%. NO_x emissions, which had been growing rapidly since the 1940's, were held roughly constant for the period from 1980 through 1985, largely due to Clean Air Act control programs. There is still some scientific uncertainty about direct effects of SO_2 and NO_x, and for this reason ambient standards are subjected to periodic review and updating. Based on best information currently available, however, these direct effects appear to be under control.

After they are emitted, some of the SO_2 and NO_x gases in the atmosphere are chemically transformed into sulfate and nitrate particles and can be carried by the winds for hundreds or thousands of miles. This occurs even though sources may be controlled to levels which meet the ambient standards for primary pollutants (SO_2 and NO_x). These transformation products from a number of sources can combine to cause regional air quality problems. Together with other particles they can create regional haze, which reduces the clarity and range of visibility. Major research efforts are currently being directed toward resolving the uncertainties with regard to the health effects of fine particles. In addition, EPA has recently proposed a new ambient standard for small particles which should help to reduce the potential for health effects.

Finally, after numerous complex chemical processes and possible transport of thousands of miles, the sulfur and nitrogen that was emitted as SO_2 and NO_x can fall as dilute sulfuric and nitric acid, or acid rain (if deposited in dry form, snow, or fog, it is more correctly called acid deposition). Our scientific understanding is more tentative and qualitative in this area. We know acid deposition can and has acidified at least some lakes. The number and identity of lakes at risk depends upon the ability of the natural chemistry of particular lakes and their watershed soils to neutralize incoming acid, as well as upon the amount of that acid. Information on these issues will be available in the NAPAP Interim Assessment Report to be released later this month.

Market-oriented approaches to control, including emissions tax programs such as H.R. 2497, will be of great interest in the event that a major reduction in SO_2 and NO_x is required. EPA has been actively working to develop and implement emissions trading, or "bubble" programs within the existing statutory framework for several years as one path to allowing market decisions to select the most efficient response to environmental requirements. The emissions tax approach would represent a more comprehensive step in this direction. It should be noted that other similar approaches such as marketable emission permits could achieve the same objectives. It might be particularly relevant in the event that we reach a national political consensus that a major regional reduction in emissions of SO_2 and/or NO_x is required. The regional loadings nature of the potential effects, and the fact that relatively few sources account for major components of the total emissions, may make this a particularly important opportunity for market oriented approaches.

Classical economic theory has long held that the best approach for achieving environmental goals is to rely on market incentives. They suggest that pollution exists because firms do not have to pay for the use of the air into which they discharge their wastes. Rather, they enjoy free use of the air resources and impose costs on others in the form of reduced human health and welfare. The solution, according to classical economic theory, is to make producers pay for the use of the air resource -- at a rate equal to the cost of the damages they imposed. In theory, if a tax is charged for each unit of emissions, those producers who can install controls more cheaply than the amount of the tax will control emissions rather than pay the tax. Conversely, those producers for whom the costs of control are higher than the amount of the tax will choose to pay the tax rather than control. In this way, emissions will be reduced up to the point where the costs of further reductions just equal the benefits of control.

Although emission taxes have been used to help fund local pollution control programs, such as in Southern California, I am not aware of any major use of an emissions tax as a primary emissions control program in this country to date. The traditional approach taken by this country to environmental regulation is "command and control" whereby the government specifies a technology or emission limitation that must be uniformly applied to all similar sources.

Some environmentalists have viewed taxes with suspicion because they leave open the possibility of polluting the air if a firm is willing to pay enough for the privilege of so doing. Another concern is that in practice there is considerable uncertainty about the emissions reductions which would result from a particular level of emissions tax. This could raise serious problems in dealing with health based standards which require that certain threshold emissions or ambient levels be precluded. Other concerns about emissions taxes have been raised due to the difficulty of monitoring and enforcement.

The design of an emissions tax program requires a clear understanding of a number of factors. The first is whether the primary purpose is to raise revenues or to reduce emissions. The timing and amount of the tax, and how it is used, will affect the amount of revenues generated and the amount of emissions controlled. A second major issue is the level of the tax. From an economic standpoint, the tax should be set at the marginal cost to society of the harm imposed by the emissions, to avoid either over- or undercontrol. However, this value is very difficult (or even impossible) to determine for SO_2 and NO_x because of the substantial scientific uncertainties I have described earlier and difficulties in achieving consensus on the social value of reducing adverse health and environmental effects. Also, the environmental harm sought to be reduced may vary with the proximity of the emissions to the sensitive population or ecological resource, as well as with a host of other factors such as meteorology and interaction with other sources and pollutants. For these reasons, a uniform tax may not ensure that costs and benefits are balanced in the control program.

Despite these difficulties, emission taxes offer major advantages over traditional "command and control" regulations:

- Under "command and control," government must decide which controls to install and who must install them. Because of government's limited access to cost information, this inevitably results in overcontrol for some firms (whose costs of control are high) and undercontrol for others (whose costs of control are low). Under emission taxes, these decisions are made by industry, which has better cost information and presumably will control the cheaper sources of pollution before the more expensive ones. The result is that the total control costs associated with achieving an environmental goal are likely to be lower with emission taxes than with "command and control" regulation.

- Emission tax systems for acid rain control may be administratively easier to implement than "command and control" regulations. Several bills relying on the latter approach have been submitted in Congress in the past few years. These bills typically rely on state governments to devise a plan laying out which sources must install controls to achieve a state-wide emission reduction target. This plan must then be approved by EPA before it takes effect. EPA's experience indicates that this process can take several years or more. The emission tax system laid out in H.R. 2497 eliminates these steps and has the potential to result in controls being installed more quickly.

The Tax System in H.R. 2497

I have outlined some of the advantages of a "pure" emission fee system. In such a system, the fee would be based upon the damages imposed by the pollution and the revenues collected would go to general revenues. This kind of system is efficient because it minimizes pollution control costs.

The emission tax system in H.R. 2497 differs from a "pure" system in three significant respects:

- The tax is not based on damages but consists of a three-tiered fee scale, with higher unit taxes being imposed on sources with higher emissions rates. This affects both the revenue collected by the bill as well as the stringency of the pollution controls.

- The revenues collected do not go to the general fund, but are used to subsidize capital equipment used for pollution control and the construction of new powerplants. As I will discuss later, this distorts the control decisions made by utilities and significantly raises overall pollution control costs.

- The tax system is imposed too quickly to give sources a chance to respond with a rational set of emission controls.

EPA has carried out some quantitative analysis of one interpretation of the requirements of and responses to H.R. 2497 for the utility industry (by far the most heavily affected source category). The bill requires that revenues collected through the "SANE tax" be placed in a trust fund which can only be used to assist taxpayers in meeting the requirements of the bill or by the relevant government agencies in administering the program. Thus the intent is clearly that the revenues largely be returned to the taxpaying sources. The exact provisions under which such subsidies would be administered are not specified in the bill but are crucial to any quantitative analysis. For this analysis EPA assumed that the subsidies would be provided through a no interest loan and "loan forgiveness" program similar to that outlined in H.R. 2498.

It is also important to recognize that even for the specific assumptions used in our analysis, it is very difficult to predict with precision the response of taxpaying utilities to a very complex set of choices presented by such legislation. The actual choices will be affected by many financial and technical factors which are specific to the individual company, or to particular plants or units. It is not possible to capture all of these variables in a national modeling analysis. Instead we are attempting to provide a broad sense of the directions and magnitudes of responses which might be expected from such requirements.

EPA's analysis of H.R. 2497 estimates that it will result in a 10.6 million ton per year reduction in SO_2 emissions and a 2.4 million ton reduction in NO_x emissions below projected 1995 levels for the electric utility industry. The pollution control costs associated with these reductions total approximately $3.7 billion/year (after subsidies). In addition, $3.3 billion/year would continue to be paid annually into the SANE trust fund after cost-effective control measures were completed. The annualized value of subsidies in the year 1995 is estimated at $1.0 billion.

Utilizing methodology comparable to that of the H. R. 4567 analysis, EPA has analyzed several other legislative proposals that reduce SO_2 and NO_x emissions by roughly the same magnitude as H.R. 2497. For example, we recently analyzed the least-cost approach to achieve the requirements of S. 316. The bill requires about a 9 million ton SO_2 reduction and about a 2 million ton NO_x reduction from the utilty sector by the year 1997. It is interesting to compare the costs associated with each approach. As I stated earlier, the combined utility pollution control costs and tax payments associated with H.R. 2497 are estimated at $7.0 billion/year. We do not necessarily expect that the least-cost implementation of S. 316 would actually result if the program were enacted. For this and several other reasons, we do not support S. 316. However, the least-cost case provides a reference point of analytic interest. Under this case, control costs are estimated at only about $2.1 billion/year. The utility expenditures passed on to ratepayers would be 70% lower. The two analyses bills of course are not exactly comparable. However, one would not expect to see such large differences in utility expenditures for a change in levels of reduction from 9 to 10.6 million tons if both bills used efficient, least-cost approaches.

There are two major reasons for the large differences in total cost. First, the SANE tax program generates tax revenues as well as control response. Thus the total expenditures from the taxpaying sources include both pollution control costs and residual tax liabilities. This analysis has not quantified the interactions of this emissions tax liability with other taxes paid by the industry. In particular, emissions taxes paid would be deductable from corporate income tax. Thus EPA's preliminary analysis probably overstates somewhat the net expenditures required by the program from the utility industry. It is clear though that the bill would tax some emissions remaining after cost-effective controls were implemented and that this adds significantly to the total utility expenditures and ratepayer impacts.

The second major reason for the higher cost is the inclusion of the three deviations from the economically efficient "pure" tax approach noted earlier. These deviations result in a relatively inefficient total solution to the emissions reduction problem. However, these specific provisions are clearly intended to address other policy objectives often raised in debate about acid rain. Included in this category are concerns such as a change in regional coal mining and production, and the potential for large differences in electricity rate increases from company to company and region to region. These concerns will arise in any SO_2/NO_x control program. In this bill it is clear that the subsidy provisions and the tax rate structure represent a sacrifice in efficiency in exchange for some expected benefits relative to these concerns.

A key conclusion the EPA preliminary analysis is that the version of the bill we analyzed appears to be a major net revenue generator. The three tiered tax structure proposed virtually guarantees large and continuing tax payments. It is very difficult and costly for many sources to retrofit controls to meet a 0.6 lb/MMBtu SO_2 limit. The same is true for the 0.4 lb/MMBtu NO_x emissions rate. Therefore, it is likely that many sources will continue to pay some tax for the remaining lives of these facilities.

On the other hand, largely because of the timing of the tax requirements, the ability of the utility industry to absorb the available subsidy funds is limited. Because the tax goes into effect so quickly, utility companies are "locked in" to currently commercial options -- retrofitting flue gas scrubbers or fuel switching -- for reducing emissions. For many existing sources, retrofitting scrubbers would be prohibitively expensive. These sources would therefore be forced to switch fuels to reduce their emissions as much as possible but would continue to pay tax on the remaining emissions which would almost certainly be above 0.6 lbs/MMBtu for SO_2.

The subsidy provisions and the low minimum tax threshhold would encourage more scrubbing than would otherwise occur for this overall level of SO_2 reduction. With the subsidy program we have assumed, this would not be sufficient to absorb the fund. As the bill specifies that the fund can only be used for purposes related to SO_2 and NO_x control this could present a problem. In practice, it would be necessary to adjust the tax rates downward and/or increase the levels of subsidies available in order to bring the program more nearly into balance. As noted above this is a very uncertain calculation and would require both considerable analysis and some flexibility in the program design. Alternatively, the program could be revised to allow excess funds to be turned over to general revenues.

As mentioned, the "pure" tax approach would apply a tax rate based on the social cost of environmental damage, which is not dependent on the emission rates of individual sources. The introduction of the graduated schedule of taxes based on emission rates and the minimum emission rate below which no tax is paid inherently distorts the overall efficiency of the concept. This deviation has potential policy benefits. It reduces the number of emitting sources paying both control costs and residual taxes, and therefore the total industry expenditure. Some might also argue that there is a kind of equity in taxing the higher emitting sources at a higher tax rate.

In setting such rates and exempting some "acceptable" level of emissions, it is very difficult to defend the particular cutoff points chosen. Emission rates which can be reasonably achieved vary greatly by region and by boiler type. It could be argued that applying a uniform threshold rate to all taxpaying sources unfairly penalizes some regions and companies after the fact for decisions made in good faith earlier.

The net revenue generation of the bill accounts for a large portion of its high required utility expenditure relative to other cost-effective control programs in EPA's analysis. The other major reason is that the subsidy and other provisions cause complying sources to adopt more costly control options than the least cost options.

The net control costs paid by utilities are projected at $3.7 billion in 1995. The estimated value of subsidies for that year is $1.0 billion. Thus the total annual cost of control measures is $4.7 billion in 1995. This is significantly higher than the least cost solution for S. 316 discussed above. Although clearly expensive, this deviation from principles of overall efficiency addresss other policy objectives. Most importantly, it would preserve some amount of high sulfur coal production in the regions of Northern Appalachia and the Midwest, which would otherwise suffer major reductions under a least-cost solution.

Under H.R. 2497, coal production in the two regions would be reduced by about 75 million tons in 1995. This is an improvement on the projected production losses of over 100 million tons in these regions under S. 316 (by 2000). Although we have not analyzed the utility financial impacts of H.R. 2497 it is possible that one effect of the subsidies would be to spread the costs of control somewhat more evenly, reducing the customer rate impacts which would otherwise be experienced by the most severely affected companies.

Our preliminary review of the bill raises several other implementation issues which should be given careful analysis prior to enactment of such a proposed emission tax program. There are questions as to whether the current state of the technology for continuous emissions monitoring would support the requirements of the bill, particularly given the numbers of monitors which would have to be installed in a very short time period. The bill's focus on hourly emissions data could strain both monitoring and data handling capabilities. In addition, the ability to independently audit tax returns of industrial sources below 250 MMBtu/hr would be very limited with currently collected data.

Conclusions

In summary, H.R. 2497 clearly presents a number of useful concepts which should be considered in the debate on regional SO_2 and NO_x control. The use of emissions taxes for SO_2 and NO_x control deserves to be analyzed in considerable detail. Our understanding of the science of acid rain and related regional air quality problems is progressing rapidly as a result of major research programs. It is important that careful study of various alternative approaches to control proceed in parallel.

EPA cannot support passage of H.R. 2497 for several important reasons. First, it is premature to adopt any major control approach while key scientific issues about acid rain and aerosol health effects remain unresolved. Significant improvements in this knowledge base are expected over the next few years. This information should greatly improve our ability to determine the appropriate response to these complex problems.

In addition, specific provisions of the proposed bill would result in very high costs to the economy relative to other approaches. Because of some of these provisions, the normally expected efficiency benefits of a market-oriented emissions control approach would probably not be realized. The bill could be considered a useful "first cut" at how to apply emissions taxes to regional SO_2 and NO_x concerns, if we conclude that additional controls are needed. However, it raises many questions which need careful analysis and resolution before its appraoch could be considered sound public policy.

Thank you again for allowing us to present our views on this issue and I would be glad to answer any questions you might have.

Chairman ROSTENKOWSKI. Would you consider this type of tax a benefit tax or a user fee or an excise tax? What would you consider this tax, Mr. Campbell?

Mr. JOHN M. CAMPBELL. Well, I think I should probably defer to Mr. Steuerle on that. It seems to me as if it is an excise tax.

Chairman ROSTENKOWSKI. I am sorry. I should have directed that to you, Mr. Steuerle.

Mr. STEUERLE. I think we would consider it primarily an excise tax. One difficulty with the user fee analogy is that in this case a tax is being imposed on an external cost. It is not a user fee in the sense that it is a payment for a benefit being given to the utilities. Therefore, we would think of it as an excise tax.

Chairman ROSTENKOWSKI. Do you feel that the IRS could administer this effectively?

Mr. STEUERLE. I think that if one ever went to this type of mechanism, I think certainly in the short run the IRS could not administer it. Even in the long run, I think one would want to design this tax in a way that the measurement responsibilities lay with that organization with the appropriate expertise, so that one would want an agency like EPA to be doing the monitoring. If those measurements were made by an outside agency and all IRS were left with is the accounting, the IRS could administer it.

However, if the IRS is left with responsibility for monitoring levels of pollution control, the extent to which pollution control devices are put into place, trying to figure out whether the pollution control device is properly defined, I think that currently falls far beyond its current capability and would require additional staffing perhaps of a significant order in order for it to undertake that responsibility.

Chairman ROSTENKOWSKI. Mr. Campbell, could you comment on the reliability of using continuous monitoring devices versus fuel sampling to determine the amount of emission?

Mr. JOHN M. CAMPBELL. I would be pleased to do so and if I can't answer the question as adequately as you would like, we will submit information for the record.

Continuous emission monitors are regarded by the agency as effective and accurate devices as used, primarily for monitoring over a 30-day averaging period. If used as proposed in the bill for a 1-hour averaging period, there could be in effect a loss of accuracy by our estimates of roughly plus or minus 10 percent.

In terms of fuel sampling, the significant problem you run into with fuel sampling is that coal is inherently variable such that there may be a substantial difference in the SO_2 of pounds per million Btu of one sample versus another. We have noticed a range of half a pound in a given car load of coal. Given that, it would seem to me that a monitoring device with an appropriate averaging period would be a more accurate way of measuring emissions either for this legislation or for other legislation.

Chairman ROSTENKOWSKI. How would you compare these methods with the bubble approach?

Mr. JOHN M. CAMPBELL. In terms of economic efficiency, sir?

Chairman ROSTENKOWSKI. Yes.

Mr. JOHN M. CAMPBELL. Well it is the same concept. The concept of a bubble is to say that the most efficient reductions should be achieved first and by those sources that can reduce the most efficiently. The difference in terms of this proposal is that the tax is, in theory, based on the social damage caused by the pollutant and that tax, when paid should, be returned to those people who bear the cost, that is, the public.

In the case of the bubble policy, while it achieves reductions—cost reductions—it does not compensate the parties who are in fact damaged.

Chairman ROSTENKOWSKI. I noted that the administration determined that the Senate bill is much less costly, as I understand it. Could you explain to me what led you to that determination? As I understand it, the House bill is $7 billion and the Senate bill is around $2.1 billion.

Would you give me an explanation as to what you used in order to come to that conclusion?

Mr. JOHN M. CAMPBELL. We used the same analytical techniques, the same modeling probability, a linear programing model choosing the least-cost method of complying within the constraints of the law as proposed.

As I mentioned, they aren't comparable, however, in the sense that the Senate bill, S. 316, does not levy a tax. Instead, it has simply an emission rate and allows the sources to trade up or down to achieve that emission rate. So that, in effect, it is very similar to a bubble in that sources may trade with each other.

That is one of the major sources of the difference in cost. Another one is as both Mr. Steuerle and I pointed out, there are certain inefficiencies that are inherent in the legislation we are talking about today. Those inefficiencies propose additional costs in terms of either obtaining emission reductions through scrubbers or in other ways shortening the period of time in which the sources have to comply.

Those are all reasons why this legislation turns out to be more expensive than the Senate bill. However, I might add, too, that the Senate bill also achieves less emission reductions and one of the things that we found as we have looked at the various proposals in Congress is that once you pass 8 to 9 million tons of emission reductions per year, the cost per ton goes up substantially.

Chairman ROSTENKOWSKI. Thank you, Mr. Campbell.

Mr. Anthony.

Mr. ANTHONY. I have no questions, Mr. Chairman.

Chairman ROSTENKOWSKI. Mr. Downey.

Mr. DOWNEY. Mr. Chairman, thank you.

Mr. Campbell, can you tell me what President Reagan and Canadian President Mulroney agreed to in March of 1987, what the findings of that joint report were and where the program is that the President has promised?

Mr. JOHN M. CAMPBELL. I think I can explain most of the commitments that the President and the Prime Minister reached at that point. The principal one was that they agreed to consult through the bilateral consulting group. That process has been going on since April.

The other part of the commitment made was to fully implement the joint envoy's invoice report. That contains several commitments on the part of the United States.

One was to request an appropriation for $2.5 million for so-called clean coal technology demonstration projects.

That request was made by the Office of Management and Budget, I believe, in April or May.

Another commitment was to establish a panel that would assist the Secretary of Energy in selecting clean coal technology demonstration projects that would contain a broad mix of both U.S. citizens representing industry and environmental groups and also Canadian citizens. That panel, too, has been established and I believe they have met at least once.

A third commitment was to work toward achieving some near-term mission reductions. The President established the Vice President's Task Force on Clean Coal Technology to meet that commitment. I am, in fact, one of the people, who work on that group and I can say that we are working very aggressively on a very tight time table to come to some conclusions about what can be done through the existing regulatory mechanisms to reduce SO_2 and to, in fact, create an incentive for clean coal demonstrations.

I think those are pretty much the basics of the commitments. As far as I know, there were no other commitments.

Mr. DOWNEY. Am I correct in understanding that the President is committed to and interested in a market-based system of control on this problem; is that a fair statement?

Mr. JOHN M. CAMPBELL. I think it would be a fair statement to say that the President is interested in a market-based approach to all environmental regulations wherever permitted by law.

Mr. DOWNEY. Given that, what levels of the tax do you think would provide the necessary incentives to safely reduce emissions on a cost effective basis?

Mr. JOHN M. CAMPBELL. Well, let me try to answer that in two ways. The economist would say what you should do is set the tax at the marginal cost of the damage that is created by the pollutants. That would be indifferent to the number of tons that would actually be reduced.

As a practical matter, another way that one could approach it is by asking the question what do you want to get in the way of emission reductions and from that establish an approximate estimate of the tax rate or the tax per ton of emissions that you need. The bill as proposed here has a marginal tax of approximately $780 per ton, maybe a little bit higher than that.

That will yield approximately 10.6 million tons of emission reduction from utilities and 1.6 million from industrial sources. You go back down to $500 per ton and you are down in the area of approximately 9 to 8 million tons per year of emissions reductions.

So you can really do it either way. The economically efficient way of doing it is to understand what the cost of the damages to society is and set the tax accordingly.

Mr. DOWNEY. What has EPA's experience been in Iowa and Missouri on the operation and maintenance of the particle emission program?

Mr. JOHN M. CAMPBELL. I don't know that. I would have to provide that.

[The following was subsequently received:]

PARTICULATE MATTER CONTROL PROGRAMS IN IOWA AND MISSOURI

Iowa controls sources of particulate matter (PM) through its Air Pollution Control Regulations (Administrative Code, Division 562, Chapter 20–29, as amended). Iowa's regulations were submitted as its air pollution control implementation plan on January 27, 1972. Revisions and amendments to the state implementation plan (SIP) have been submitted at various dates subsequently. Nonattainment plan provisions, as required by the Clean Air Act (Act) Amendments of 1977 were submitted on June 22, 1979. The submission included amended rules relating to fugitive dust and new rules relating to offsets for PM. The revisions included attainment plans for PM in Mason City, Davenport, Cedar Rapids, and Des Moines. The submission was disapproved, in part, for failure to meet the requirements of Part 173 of the Act and was conditionally approved with respect to several requirements. The disapproval resulted in a construction ban in Polk County; subsequent nonattainment plan provisions and additional information submitted through 1980 proved sufficient to lift the moratorium.

Missouri's particulate matter program is codified in the Missouri Code of State Regulation, Title 10, Division 10, Chapters 1 through 5, as amended. The Missouri SIP was submitted on January 24, 1972. Plan revisions and amendments were submitted from 1972 through 1979. On July 2, 1979, Missouri submitted a plan to attain the national ambient air quality standards (including particulate matter) for the Kansas City and St. Louis areas of the state, which were designated as nonattainment for PM. The plans were approved with certain exceptions and resulted in construction bans being considered for St. Louis and Buchanan Counties. Additional information showed the plan for St. Louis County to be adequate for attainment of primary and secondary PM standards. However, Buchanan County was placed under a construction moratorium for failure to provide adequate planning to assure attainment of the primary particulate matter air quality standard.

On July 1, 1987, the Environmental Protection Agency promulgated final rules concerning revision of the national ambient air quality standards (NAAQS) for particulate matter. The new primary and secondary standards revises the definition of PM to particles with an aerodynamic diameter of less than 10 micrometers (PM–10). In addition, these revisions change the level as well as the form of the PM standards. Implementation of the NAAQS revisions will follow Section 110 of the Act which broadly requires state and local agencies to adopt and submit, within 9 months, SIP's which provide for attainment and maintenance of the NAAQS. Among other consequences, the revisions lift construction bans which were in place.

In order to assist state and local air pollution control agencies in fulfilling the requirements of the revised regulations, a series of national workshops was held in August of this year. Representatives of the Iowa and Missouri air control agencies participated in the PM–10 workshop held in Denver on August 19–21, 1987. In addition, a self-instructional course is being prepared by the Air Pollution Training Institute to bring interested parties up to speed on the basic requirements of the new regulations.

Mr. DOWNEY. We don't deny anymore that acid rain is an environmental problem of immense proportion, do we?

Mr. JOHN M. CAMPBELL. No, sir, we don't. We believe it is a serious problem. As I mentioned, there are a number of things we think need to be done immediately and there are things that we think need to be examined for possible actions in the future, as well.

Mr. DOWNEY. Could I ask Treasury a question? You say—I sense from your testimony that you are not conclusively saying whether you like the bill. You favor a benefit or use tax, is that a fair statement of your position?

Mr. STEUERLE. We oppose the bill at the present time, but we are trying to recognize that the sponsors of the bill are attempting to create market-oriented approaches as alternatives to regulatory approaches to dealing with this problem and we applaud that.

We are not convinced that taxation is the best approach. A lot of the acid rain problem may be geographic in nature and a national uniform rate of taxation may be very inappropriate to deal with a problem that would better be dealt with on a geographic basis and could be dealt with through market-oriented approaches.

So we oppose the bill for several reasons, not the least of which, by the way, is its large cost, especially in the short term relative to the amount of pollution abatement you would get, but we do encourage looking at market oriented approaches.

Mr. DOWNEY. You mentioned before the point about the IRS not being capable of doing the air quality monitoring that would be required. Would it be possible for the EPA to do that or the States to do that?

I know in my own State of New York we have a fairly rigorous air quality monitoring, some is even done by the utilities and some of it is done by the State. Is it possible to have some other agency of government that is more expert than possibly Internal Revenue Service do that as a hedge against one of the problems of administration?

Mr. STEUERLE. I think there are two levels to your question, whether it would be more appropriate for another agency to do it, and the second question is can another agency do it.

As to whether it is more appropriate, I would say probably yes. You would like another agency to provide certification to the Service.

That allows the Service to do things under its expertise and doesn't have you splitting expertise across agencies where you are duplicating efforts. The IRS does not currently monitor the number of these devices although it checks the accounting books of the utilities.

As to whether it can be done cheaply, that is a question we tried to address with further examination, further studies on these issues, how reliable are these monitoring devices. There are also some minor aspects to it.

Even if a monitoring device is 95 percent reliable if a utility finds that it can save taxes by doing more elaborate types of measurement, it may engage in this costly form of measurement because it might save taxes. Therefore, it might spend millions of dollars for measurement with no benefit to society.

We have some concern where there is unreliability of devices that there is a social cost imposed.

Mr. JOHN M. CAMPBELL. I think there are—there is a difference between monitoring that we traditionally do for enforcement of our existing regulations and the kind of monitoring that would be necessary under a tax proposal. We currently do not monitor the primary sources that would be targetted in this legislation in the same way as we would under the legislation.

We use what is known as an emissions stack test for regulatory purposes to determine compliance. That is quite a different method than the continuous emission monitor.

While we have reason to believe that the continuous emission monitors that we use on the newer plants are accurate for regulatory purposes, the other caveat that comes into play is that is you have to ask accurate relative to what? We know that the stack test by and large has its own limitations and the stack test is in fact used as a basis for determining the efficacy of the continuous emission monitors. Clearly if we were going to be levying a tax on the size of the legislation here, we would want to do additional testing, find out how to bracket whatever error there was, whether duplication of the monitors made sense. The kind of program we administer now is very different from the kind of program we would be administering under this.

From our standpoint it would be easier to administer because we would no longer have to use the State implementation plans, we would be regulating at the Federal level.

Chairman **ROSTENKOWSKI**. Mr. Duncan will inquire.

Mr. **DUNCAN**. Thank you, Mr. Chairman.

Mr. Campbell, what studies have you made on the impact on the toxic acid? What studies are you making in your department now?

Mr. **JOHN M. CAMPBELL**. There are a number of things that are currently being examined, Congressman.

Acid aerosol is one issue that we are examining. Acid aerosol is also part of the consideration that the national acid precipitation assessment program is undertaking. I couldn't give you the details of the studies that are being undertaken.

Mr. **DUNCAN**. What evidence has been developed to date of the link between the sulfur and nitrous oxide emissions and acid rain?

Mr. **JOHN M. CAMPBELL**. We feel very comfortable with the link between SO_2 and NO_x emissions and acid deposition. What we don't feel comfortable with is the role of other precursors such as ozone, such as organic compounds and, as I mentioned, the relationship between different sources of sulfur dioxide emissions and the receptors, either the lakes or the other sensitive aquatic or other atmospheres that may be affected. It is not that the relationship between the chemical transformation is uncertain, it is where are the emissions, what are the effects that we feel uncomfortable with in terms of our understanding.

Mr. **DUNCAN**. Are you working on that?

Mr. **JOHN M. CAMPBELL**. Yes, sir. That is a part of the assessment program. It is also a part of the research that the agency has been undertaking for several years.

Mr. **DUNCAN**. Mr. Secretary, I gather that you indicate that this entire thing might be a loss instead of a gain in taxes.

Mr. **STEUERLE**. I am sorry. I didn't understand your question.

Mr. **DUNCAN**. What would be the cost if this legislation passes? Would it be a tax loss or a gain?

Mr. **STEUERLE**. We believe that over the 5-year period this particular tax would raise approximately $26 billion in taxes. One reason it raises so much tax over the short run is because we don't believe that the amount of pollution control that one achieves in the short run is really that great. Many utilities are locked into existing contracts and technology and so what essentially happens is that many of them end up paying the tax because the tax is cheaper than is the pollution abatement. So in the short run, we get a large amount of tax revenue without achieving much of the goal of pollution abatement.

Over the longer run, you move down the opposite end. Over the longer run, you start getting more pollution abatement.

Mr. **DUNCAN**. Do you have any idea how this new tax would affect our industry's ability to compete in international markets?

Mr. STEUERLE. We believe any tax that is too high and unnecessary certainly hurts our industry's ability to compete because it raises the prices of our products above those of foreign countries. I don't want to stretch the argument too far. Pollution does cause problems, too.

Clearly, we also have a cost to society, so we want to compare the cost of the tax to the cost of the pollution. In this case, we think especially over the short run that the cost of the tax would be much too high and that the harm to our industry would be much too great to allow us to support it.

Mr. DUNCAN. Thank you.

Thank you, Mr. Chairman.

Chairman ROSTENKOWSKI. Mr. Flippo?

Mr. FLIPPO. No questions.

Chairman ROSTENKOWSKI. Mr. Gregg.

Mr. GREGG. Thank you, Mr. Chairman.

First, I appreciate Treasury's testimony. If I could summarize one of the core aspects of your testimony, it is basically that you think prices should reflect social cost. Is that a correct characterization of your opening statement and your discussion just now with Congressman Duncan?

Mr. STEUERLE. I believe that is correct, yes.

Mr. GREGG. If I could sort of summarize quickly one of the key statements that you made Mr. Campbell, it seems to me you are saying that you see some significant merit in choosing an economic incentive approach over a regulatory approach. Is that correct?

Mr. JOHN M. CAMPBELL. That is certainly correct in all areas where we have established that there is a problem that should be controlled by the Federal Government, yes.

Mr. GREGG. To get back to some specifics, have you folks at EPA determined what the economic impact costs are relative to SO_4 visibility benefits?

Mr. JOHN M. CAMPBELL. There is a long answer to that, Congressman, and there is a short answer to it.

We have a regulatory impact assessment which you may be aware of that is currently available and it has been made public. That regulatory impact assessment assesses the benefits to society of visibility improvement at approximately $2.3 billion per year.

That would clearly be associated with what we call fine particle matter, most of which is associated with sulfur dioxide emissions and the ultimate transformation products.

Mr. GREGG. Do you have a number that would be tied to ozone?

Mr. JOHN M. CAMPBELL. I do not have an exact value for that across the country as a whole. We have assessed that at different values on a per ton basis. I do want to make one other comment about the visibility issue.

One of the key issues that we are trying to resolve in terms of our visibility estimate of damage is the question of what people are valuing in terms of their assessment of visibility impairment. There is a serious question about whether they are evaluating the loss perception, being able to see a shorter distance, as to whether they are evaluating implied health risks.

That is a subject that we consider serious enough to deal with in more detail so I wouldn't be confident of using that number in terms of any decision or action.

Mr. GREGG. The total number that you came up with on the regulatory impact assessment was $14.8 billion. In that you had a health figure for SO_2 which was marginal, did you give any credibility to the American Lung Association's position that the cost of sulfur emissions is about $16 billion annually in health costs?

Mr. JOHN M. CAMPBELL. I can't say that we would either support or reject that, Congressman. One of our concerns that we are trying to look into is exactly what the permanent damage or the chronic damage to lung functions would be from either sulfur dioxide directly or for some of its transformation products.

Mr. GREGG. I assume in looking into that you would look into the Lung Association——

Mr. JOHN M. CAMPBELL. Certainly. As a matter of fact, we looked at that after they testified I believe before the Senate last.

Mr. GREGG. How about the CRS study which concluded there was about $2 billion of damage to crops created by SO_2? Did you look at that?

Mr. JOHN M. CAMPBELL. I am not familiar with the particular study. Our understanding at this point about crop damage is that it tends to be more a function of atmospheric ozone as opposed to sulfur dioxide and certainly not nitrogen dioxide, which may actually provide a benefit in terms of growth.

I might also add that from an economist's perspective, that might not be a total damage problem since many of those crops are receiving support payments.

Mr. GREGG. You have had your Clean Air Scientific Advisory Panel suggest that you switch to a 1-hour SO_2 standards. That is a much more stringent standard.

I presume they had scientific evidence suggesting they move in that direction. Is that true?

Mr. JOHN M. CAMPBELL. They didn't say that we should do that, they said that it was a health effect within the meaning of the Clean Air Act.

My own sense is that the health issues that are involved in the 1-hour SO_2 standard will need to be fully fleshed out before the agency can decide whether or not that is something we should regulate under the current National Ambient Air Quality Standards.

Mr. GREGG. In light of the fact that there have been all these studies, your support at least in general terms here today, and your testimony that says that SO_2 and NO_x are major precursors of acid rain and represent a serious environmental problem, isn't it logical to argue that the numbers are there to support an economic incentive approach or regulatory approach to reduce acid rain?

Isn't that basically what was agreed to in the Canadian-American Conference?

Mr. JOHN M. CAMPBELL. Not to my understanding, Congressman. The agreement was that we were to work toward a better understanding of what the nature of the problem was and that in the interim we were to commit to a clean coal technology program.

One has to keep in mind when talking about economic efficiency that the premise is that we understand what the social damage function is. If we don't understand that, and I have explained in a number of areas where we face uncertainties about the cost to society, it is difficult to determine either what a level of tax should be or alternatively if we were to use the marketable permit approach, how many should be offered for sale or allocation.

So the basic premise of an economically efficient program is that we understand what the social costs are.

Mr. **Gregg.** If you accept my argument, would you agree that we would rather go the economic route than the regulatory route?

Mr. **John M. Campbell.** If we had come to the conclusion that we understood the problem, that we knew what the damage function was, the regional transformation function, I would try to correct it with an economic incentive approach, although I would probably not choose a tax.

Mr. **Gregg.** Thank you.

Chairman **Rostenkowski.** Are there further questions?

If not, thank you, gentlemen. Thank you for joining us.

Mr. **Downey.** Mr. Chairman, can I request at this time that my opening statement be placed in the record following yours?

Chairman **Rostenkowski.** Without objection, so ordered.

The Chair will now accept testimony from the Honorable Dan Coats of Indiana and following Representative Coats, Mr. Oxley of Ohio.

Dan, if you would like to start, the Chair is ready and willing to accept your testimony.

STATEMENT OF HON. DAN COATS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF INDIANA

Mr. **Coats.** Thank you very much, Mr. Chairman. I appreciate your allowing me the opportunity to testify before the committee this morning.

Even though this bill is primarily a tax bill, it does constitute acid rain control legislation and as a member of the Energy and Commerce Subcommittee on Health and the Environment, we have spent a lot of time investigating the whole question of acid rain and done a number of studies and a number of people have testified before us.

As a Representative from the State of Indiana, I am concerned about this proposal because Indiana under this bill is impacted more drastically than any other State in the Nation except Ohio. So we have a considerable interest in the provisions of this legislation that your committee is considering, and, again, I thank you for the opportunity to testify.

Mr. Chairman, we have made considerable progress since the imposition of the Clean Air Act of 1970.

In fact, the 1986 annual NAPAP report indicates that there has been a 28 percent reduction in sulfur dioxide emissions since the imposition of the Clean Air Act and that has been achieved at a time when the burning of coal to produce energy has increased substantially.

So it is not as if we are operating here in a vacuum with nothing taking place. We do have in place regulations imposed by Congress which are bringing about significant progress in what we all term as the necessary steps in cleaning up our environment. By making considerable economic sacrifice, we have made environmental progress in this area.

Second, Congress has instituted and adequately funded a 10-year study, an exhaustive study, to determine the exact nature and extent of the problem that we face and to provide us as Members of Congress with sound scientific judgments as a basis for formulating public policy.

The 1986 annual report summarizes results to date. The final report will be released in 1990. Current statements and conclusions in the 1986 annual report indicate that we are not facing such a severe environmental crisis at this particular time as to impose any necessity for a drastic or immediate solution to the problem other than the solutions that are currently underway and, in fact, one of my great fears is that by imposing through this bill or through other methods of legislation an immediate, short-term response to the problem, we will preclude necessary development and implementation of clean coal technology that will bring us the kind of long-term environmental results that we all are anxious to achieve.

Let me just say a couple of things about the NAPAP 1986 report.

The conclusions in that 1986 report and preliminary results of continuing NAPAP research indicate that as far as lake deposition is concerned, under current deposition levels additional changes to the number of lakes affected in the Northeast will be small and will occur in a timeframe of 25 to 50 years.

In the Southeast that change, if it occurs, will also be gradual, giving us adequate time to specifically identify the best course to follow. In the West there appears to be no indication that any acidification problems exist.

In forests, in those areas where stresses do exist, the data do not seem to support the hypothesis that acid rain is the cause. Other factors are probably as important or more important to forest health.

We don't know these answers for sure, but we need to find them out and NAPAP studies are progressing. Crop studies indicate no effect on the yields of most crops. However, like forests, ozone pollution may be having an effect.

As the previous testimony indicated how these different precursors mix with each other, are distributed, and their possible effects, we still don't have the final answer.

The State of Indiana is impacted severely by this legislation. If all Indiana utilities elect to pay the tax, either because of the timetable established or the fact that the cost of the pollution equipment might be more than the tax, that tax alone to Indiana constituents is $1.4 billion a year.

The State of Ohio would be forced to pay over $2.1 billion annually; Pennsylvania, $1.2 billion; Georgia, $958 million; Missouri, $909 million, and it is my understanding that Mr. Bruce, who was to testify this morning, would testify that Illinois would have imposed against it a nearly $1 billion annually tax to comply with this bill.

Mr. Bruce's plane was fogged-in in Dayton, and I assure you that contrary to rumors circulating in the room, none of that fog had anything to do with emissions.

If we look at the tax, itself, as I said, one of my great concerns is that by forcing this solution we are going to force utilities to adopt a short-term strategy to deal with this problem that may turn out to be the wrong strategy in the long run.

What if we imposed this cost only to find out that we don't make the significant reductions in acid rain that we had hoped. In fact, again, the NAPAP report indicated that there is hope for a clean coal technology development in the relatively near future that can bring about even greater reductions and perhaps a much more sensible solution to the problem.

Looking at the problem, based on 24 months operation of the cool water commercial prototype of the integrated gasification combined cycle technology, the NAPAP report says, it appears possible to build a competitive coal-fired electrical generating plant which will remove 99-plus percent of sulfur dioxide emissions and 95-plus percent of nitrous oxide emissions.

If we preclude development and implementation of that kind of technology, I think we are making a very shortsighted response.

Let me conclude by appealing to the members of the committee. Indiana, like most States in the Midwest, was clobbered in the 1982-83 recession. We are just now climbing back out of the pit.

We are scratching and clawing to hold on to every job that we can in the Midwest. We are scratching and clawing to develop new jobs. We are trying to keep the costs of doing business in the Midwest low enough so that companies will stay there, that will employ people there, that other companies may want to move there.

If we impose a billion dollar or $2 billion annual cost to the taxpayers of Indiana on our ability to produce power, which is a key component of the heavy manufacturing in the Midwest, we are dealing a heavy blow to the economic future of the Midwest.

It is not as if we are in a situation like the fortunate Northeast where we have to advertise for labor. We are trying to find jobs for people needing jobs. It is the basic stuff of what this country is all about and we are scratching to keep competitive with foreign nations, just to keep competitive in our region.

Mr. Chairman, you know what we are facing. Every penny of extra cost in the manufacturing process puts us at a disadvantage. We are scratching for pennies and nickels, not dollars. So we are asking for time to develop a proper solution.

We are concerned about the environment, we want to clean it up, we want to do our part. We are already doing our part by spending a tremendous amount of money to achieve these reductions already. But regarding additional control, we want to make decisions on the basis of sound scientific evidence.

We have authorized and funded a comprehensive study by a number of agencies of Government. They are contributing valuable information to us. Let's get that information in and have a sound scientific basis for making whatever policy decisions we have to make and then go forward and develop a proper solution to this problem.

Let's not impose a drastic short-term solution now that we may regret later.

[The statement of Mr. Coats follows:]

9/9/87

STATEMENT OF CONGRESSMAN DAN COATS BEFORE THE HOUSE WAYS AND MEANS COMMITTEE ON HR 2497, THE SULFUR AND NITROGEN EMISSIONS TAX ACT OF 1987

MR. CHAIRMAN, Members of the Committee: I would like to thank you for allowing me to testify before the Committee today. While this bill is primarily a tax bill, it also constitutes acid rain control legislation.

As a representative of the State of Indiana, I would like to point out that my state will be more severely affected by the legislation under discussion today than any other state in the country except Ohio. As a member of the Energy and Commerce Subcommittee on Health and the Environment, I have been extensively involved with the seven-year debate on how best to approach the problem of acid deposition.

Since 1980, Congress has considered over 30 bills designed to impose additional controls on potential acid deposition related pollutants. Instead of enacting legislation requiring immediate emission controls, Congress responded to requests for legislation by enacting the National Acid Precipitation Assessment Program (NAPAP). This legislation created an extensive federal research program which will issue its final report by 1990, and which will assist Congress in deciding whether additional controls are needed, and, if so, the nature of those controls.

I believe a continuing commitment to clean coal technology is also important. Coal is an ample domestic resource and is a vital source of fuel for existing electrical power generation. Coal is a relatively low-cost energy resource, and efforts to develop technology for clean-burning coal are a significant step toward reducing acid deposition.

Over the past few Congresses the legislative issues relating to acid rain have focused on identifying what additional control programs, if any, are appropriate to meet the nation's environmental protection needs. The issue divides into several parts:

* First, is the problem so urgent as to warrant immediate additional controls?
* Second, if controls are warranted, should the program focus on sulfur dioxide first, or include nitrogen oxides and possibly other pollutants as well?
* Third, if controls are warranted, what mix of options is appropriate?
* Lastly, how should the costs of cleanup be distributed, and how should they be financed?

Obviously, we on the Energy and Commerce Committee are still debating the essential parts of this issue. However, recent information from both the 1986 Annual Report of the National Acid Precipitation Assessment Program (NAPAP) and testimony before the Health and Environment Subcommittee shows that we are not facing an immediate environmental crisis.

A review of the NAPAP Report clearly shows that science has moved forward since 1980 when the program began to quantify major uncertainties about acid deposition. Continued progress through 1990 -- when the final report will be issued -- will increasingly provide policy makers essential information for establishing a cost effective, long-term resolution of this issue.

For me, an important insight is that we have sufficient time to develop and implement an effective, long-term solution to this problem. The report shows we are not immediately facing widespread, serious environmental damage as some would have us believe. Precipitous, short-term solutions such as this proposed legislation are ill-advised and not needed.

The Report also shows the Clean Air Act has been successful in reducing emissions in the United States. The billions of dollars invested in health and environmental protection since 1973 have worked to reduce emissions of sulfur dioxide by over 8 million tons annually -- about a 28 percent reduction, even though during the same period coal usage by the utility industry has dramatically increased by 70 percent.

Although these emissions reductions are impressive, we must still be concerned about the possibility of adverse environmental effects. Of prime importance is understanding the relationship between further emissions reductions and environmental benefits. Without this understanding, we can only guess what additional actions need consideration.

I understand this is where NAPAP is making substantial progress. Detailed scientific research on surface water, forests, crop, and material effects are yielding results. In the relatively near future we should learn more specifically if additional legislative or regulatory actions are needed. Again, I emphasize that research to date indicates we have time to develop a well-targeted, effective response to our environmental protection needs.

I base this conclusion in part on the recently completed Eastern and Western Surface Water Surveys and on preliminary results from other continuing research sponsored by NAPAP which show that under current deposition levels, additional changes to the number of lakes affected in the Northeast will be small and will occur in a time frame of 25-50 years.

We await more information on possible effects to aquatic ecosystems in the Southeast, but here again, preliminary research results from EPA show that change, if it occurs, will be gradual -- giving us adequate time to specifically identify the best course to follow. In the West, there appears to be no indication that any acidification problems exist.

As for forests, in those areas where stresses exist, the data do not seem to support the hypothesis that acid rain is the cause. Other factors such as ozone and natural stresses are probably far more important to forest health.

Crop studies indicate that acid rain in the amount and concentration generally experienced, appears to have no effect on the yields of most crops. However, like forests, ozone pollution may be having an effect. In our legitimate concern for the environment, can we afford to implement hastily conceived, costly solutions now, only to find out later that by not understanding and addressing the proper problem, we did not reach expected environmental protection objectives?

At this time, I would like to turn to the issue at hand, taxes. This tax bill incorrectly assumes an environmental crisis is at hand, and is presumably designed to provide an immediate incentive to the utility industry to precipitously reduce emissions thereby minimizing a severe tax liability. However, it is uncertain how this would occur. Depending on the rate-making procedure and regulatory climate in each of our 50 states, compliance strategies could vary greatly.

For instance, in my district in Indiana, if Public Service Indiana elects not to reduce emissions, but instead to pay the tax, my constituents would have to pay over $436 million annually. The tax for all of Indiana would be over $1.4 billion annually.

Several other states would experience large costs. For instance, Ohio would be forced to pay over $2.1 billion annually; Pennsylvania, $1.2 billion, Georgia, $958 million; and Missouri, $909 million.

Of course, if the company's strategy were to reduce emissions, then the cost of either installing that technology or of a fuel premium in the event a fuel switch option were chosen, would be reflected in higher electricity rates. Additionally, a tax could still be levied because emissions can not be reduced quickly or low enough to guarantee an exemption. This combined cost may be higher than the cost of the straight tax.

A particularly undesireable result of forcing a prohibitively expensive, short-term response would be to greatly hinder achieving a cost-effective, less disruptive, long-term solution. By forcing utilities to install scrubber technology on most plants, there will be little incentive to gradually phase out older facilities and build new units using up-to-date, low pollution technology.

In conclusion, the Washington Post recently published a series of editorials examining the problem of acid rain. In these articles, the Post asks what I believe are several key questions regarding acid rain and other air pollution control issues: "The outlay on pollution control, now approaching 2 percent of GNP, is large enough to affect the way the economy works. What does the country get for its money?" and "With the cost of controlling air pollution already over $30 billion a year, how much more should the country spend on it - - and is acid rain necessarily the top priority?"

Mr. Chairman, I commend you for your work last year in revising our country's tax codes. However, in light of the massive readjustments required of the American people and the uncertain effect on the economy of the new tax laws, I respectfully request that this Committee refrain from passing new burdensome tax legislation.

As for acid rain legislation, the Energy and Commerce Committee will continue to move forward toward a solution based on sound science and good public policy. I urge you not to enact a solution to the problem of acid deposition that is inappropriate and not supported by scientific research.

Chairman ROSTENKOWSKI. Mr. Oxley.

STATEMENT OF HON. MICHAEL G. OXLEY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF OHIO

Mr. OXLEY. Thank you for the opportunity to come before you today to present my views on H.R. 2497.

H.R. 2497 is a bill which would tax the electric utility industry of our country on the basis of its emissions of sulfur dioxide, SO_2, and oxides of nitrogen (NO_x). As such, it is a new and expensive tax at a time when the newly reformed tax laws of our country, which this committee worked so hard to pass last year, have not been afforded an opportunity to take effect. But the bill is also an attempt to force additional emissions reductions on an industry which has already dramatically reduced those emissions. In short, the bill is an acid rain control bill, as well as a tax bill.

The Energy and Commerce Committee, of which I am a member, has been debating the need for acid rain controls for this entire decade. No such legislation has passed the committee. The basic reason for this is that the scientific data does not support the concept that expensive emission reductions from coal burning electric utilities will solve the acid rain problem.

The existing Clean Air Act and the standards required by it have reduced SO_2 emissions by 28 percent over the past 12 years, and this has improved the quality of the air we breathe. However, while air quality has improved during that period, these emissions reductions have yielded no perceptible change in the acidity of rainfall. There are questions about what value will be received if additional reductions are required in the name of controlling acid rain.

For sure, these reductions would be costly. A single flue gas scrubber, which reduces only SO_2 emissions and not NO_x emissions, can cost $100 million. If reductions are achieved by switching from higher sulfur to lower sulfur coal, major social and economic hardships in the mining communities will be assured. For example, using a mixed control strategy such as that promoted by H.R. 4567 in the last Congress, Ohio alone would face the loss of over 8,500 jobs in the coal sector and other industries. In addition, electricity rates for all customers, including residential, commercial, and industrial, would likely skyrocket as the tax is passed on from the utilities.

Mr. Chairman, the above emissions reductions I referred to occurred while the use of domestic coal rose by 80 percent. The continued increased use of domestic energy sources is vital to our Nation's energy security. Continued use of coal, coupled with SO_2 and NO_x emissions reductions, is possible.

Advanced clean coal technologies are now being developed to provide additional electric power from coal in a cost-effective, environmentally accepted manner. However, these technologies are currently only in the commercial testing stages. My State of Ohio is now operating the largest clean-coal program of any State, established through a bond initiative. To those of us who represent coal producing areas of the country, it is important that these technologies be given the chance to develop. The amount of tax, coupled with the time schedule of this bill, may preclude clean coal technologies from being commercialized by the 1990's.

What impact will the tax have? Mr. Chairman, all electric utilities serving my State of Ohio would be forced to bear a $2.2 billion tax increase. Assuming a population in the neighborhood of 11 million for the State of Ohio, that tax increase amounts to an additional burden of over $200 for every man, woman, and child in Ohio. That should give you some idea of the costs this bill would impose. Some utilities are hit especially hard by the bill—American Electric Power alone would be required to pay an increase of at least $1.39 billion. If, instead of choosing to pay the tax, the companies would choose to install control technology or switch to lower sulfur fuel, the tax would be reduced, but the cost of the emissions reductions would be added to electricity rates. Either way, this bill will be an expensive proposition, probably more so than any of the acid rain control legislation pending before the Energy and Commerce Committee. Because the utility industry will be faced with either the expense of installing immediate emissions control technology or paying a huge tax bill, the valuable capital needed for clean coal technology development may not be there. As I stated above, this would preclude the use of these technologies until after the turn of the century. It would make the continued emissions reductions we all support more costly and possibly lead to coal mining dislocation and disruption.

In summary, Mr. Chairman, I oppose passage of this legislation for several reasons. As a tax, it is inappropriate and punitive; as an acid rain bill, it lacks a scientific basis and is unnecessary; and, as far as clean coal technology is concerned, it may well be its death knell.

An additional technological problem with H.R. 2497 deals with monitoring the actual emissions from sources. The equipment required by the bill, known as continuous emissions monitors, are costly to operate and maintain. What is more is that they rarely, if ever, can be made to work properly when retrofitted at electric generating units.

I have attached to my statement and would like to have incorporated for the record, a study which addresses the issue of reliability regarding continuous emissions monitors. This study is entitled "An examination of the Results of the EPA Conesville CEM Demonstration Program" and it was prepared by Kilkelly Environmental Associates, Inc.

Chairman **Rostenkowski**. Without objection, the study will be incorporated into the record.

[The study follows:]

AN EXAMINATION OF THE RESULTS
OF THE
EPA CONESVILLE CEM DEMONSTRATION PROGRAM

September 1984

Prepared for
The Utility Air Regulatory Group
Continuous Monitoring Committee
Richard D. McRanie, Chairman

Prepared by
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Report No. I159-84-06F

EXECUTIVE SUMMARY

The Environmental Protection Agency (EPA) Industrial Environmental Research Laboratory recently released its contractor's final project reports and program documentation from a 16-month evaluation of a KVB SO_2/NO_X continuous emission monitoring (CEM) system, installed at the Conesville Station, Unit No. 6, of Columbus and Southern Ohio Electric Company. The evaluation program was conducted during June 1981 through September 1982 by GCA/Technology Division (GCA).

EPA's primary objective of the program was to determine the ability of a commercially-available CEM system, installed at a FGD-controlled coal-fired utility boiler, to meet the CEM data acquisition requirements of the Subpart Da NSPS. The secondary objective of the program was to evaluate the achievability of EPA's November 1981 draft Appendix F CEM quality assurance requirements.

Having followed the Conesville CEM demonstration program closely from its outset, the Continuous Monitoring Committee of the Utility Air Regulatory Group (UARG) retained Kilkelly Environmental Associates, Inc. (KEA) to examine, in the context of the program's objectives, the information contained in GCA's final project reports. This report presents the result of KEA's examination and identifies those areas where KEA believes that data obtained during the program were not analyzed correctly or interpreted and presented in a manner consistent with EPA requirements.

In regard to EPA's stated objectives, the following observations are made:

1. In KEA's view, GCA's final project reports do not directly assess the results of the program in the context of EPA's stated objectives.
2. The data contained in GCA's program documentation have not been analyzed in a manner consistent with the procedures contained in either Subpart Da or EPA's draft Appendix F.

3. Of the 237 boiler operating days, constituting 208 30-day rolling averages during the demonstration program, the FGD inlet SO_2 CEM system was able to achieve the minimum data acquisition requirements of Subpart Da 49 percent of the time (or 101 30-day rolling averages); the outlet SO_2 CEM system was able to achieve the minimum data requirements of Subpart Da 60 percent of the time (or 125 30-day rolling averages); the combined inlet/outlet SO_2 CEM system achieved the minimum efficiency data requirements 45 percent of the time (or 94 30-day rolling averages); and the NO_X CEM system achieved the data requirements 27 percent of the time (or 57 30-day rolling averages).

4. When the Subpart Da data requirements are combined with the drift limitations (i.e. drift criteria for "valid" data) of EPA's Appendix F, the Conesville CEM systems were able to achieve the minimum data requirements of Subpart Da as follows: the inlet SO_2 CEM system--8 percent of the time (or 16 out of 208 30-day rolling averages); the outlet SO_2 CEM system--15 percent of the time (or 32 30-day rolling averages); the combined inlet/outlet SO_2 CEM system--4 percent of the time (or 8 30-day rolling averages); and the NO_X CEM system--5 percent of the time (or 10 30-day rolling averages).

In summary, it is clearly evident that none of the CEM systems in the Conesville demonstration program came close to achieving the data requirements of Subpart Da, much less the combined requirements of Subpart Da and Appendix F.

1.0 INTRODUCTION

During the period of June 1981 through September 1982, EPA conducted a long-term continuous emission monitoring (CEM) demonstration program at the Columbus and Southern Ohio Electric Company Conesville Station, Unit No. 6. The CEM demonstration program was sponsored and managed by EPA's Industrial Environmental Research Laboratory, with technical participation by the EPA Office of Air Quality Planning and Standards. GCA/Technology Division (GCA) was contracted by EPA to perform the on-site testing and evaluations, as well as data reduction, data analysis, and report preparation. EPA has recently released its final project report, project summary, and program documentation.1/2/3/

The stated objectives of the program were:

(1) "to demonstrate the feasibility of the monitoring requirements specified in 40 CFR Part 60 Subpart Da"4/;

(2) "to adhere to the draft quality assurance requirements scheduled for promulation as Appendix F"5/; and

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1/ "Long-Term Continuous Monitor Demonstration Program; Columbus and Southern Ohio Electric Company, Conesville Unit No. 6: FINAL REPORT," GCA/Technology Division, December 1983 (hereinafter "GCA Final Report").

2/ "FINAL PROJECT SUMMARY: Long-Term Continuous Monitor Demonstration Program; Columbus and Southern Ohio Electric Company, Conesville Unit No. 6," GCA/Technology Division, November 1983 (hereinafter "GCA Final Project Summary").

3/ "Long-Term Continuous Monitor Demonstration Program; Columbus and Southern Ohio Electric Company, Conesville Unit No. 6: Volume II - Program Documentation, Draft FINAL REPORT," GCA/Technology Division, May 1983 (hereinafter "GCA Program Documentation").

4/ GCA Final Report, p.iii.

5/ Ibid.

(3) "the development of background and support data for future quality assurance regulations"[6].

Each of these objectives pertain to an assessment of the performance capabilities of commercially-available, field-proven SO_2/O_2 and NO_x/O_2 CEM systems installed and operated at the inlets and outlet of a wet flue gas desulfurization (FGD) system of a coal-fired electric utility boiler. The emphasis of the program in regard to the first objective, the Subpart Da monitoring requirements, was to assess the performance of the monitoring systems in terms of data availability (i.e., the ability of the CEM systems to meet the hourly, daily, and monthly data acquisition requirements of Subpart Da). The second and third objectives, pertaining to quality assurance (QA), were intended to provide for an evaluation of the performance of the CEM systems in terms of data quality (i.e., the extent to which the CEM systems were able to operate within the drift and performance audit limitations specified by draft Appendix F).[7] Coincidental to these assessments, the CEM systems were to be subjected to relative accuracy testing (also required by Subpart Da) in accordance with EPA's October 10, 1979 proposed revisions to Performance Specification 2 and 3 of Appendix B to 40 CFR 60 (44 Fed. Reg. 58602).[8] The continued performance of the CEM systems was also to be evaluated by conducting relative accuracy audits (i.e. abbreviated relative accuracy tests) on a monthly basis, more frequent than required by Appendix F.[9] Apart from these performance-related evaluations, the program was also intended to provide information concerning equipment cost and resource requirements (in terms of CEM operation and maintenance).[10]

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[6] Ibid., p.1.

[7] Appendix F to 40 CFR 60, "Procedure 1 - Quality Assurance Requirements for Gas Continuous Emission Monitoring Systems (CEMS) for Compliance" was proposed by EPA on March 14, 1984 (49 Fed. Reg. 9676) (hereinafter "proposed Appendix F"). Several draft version of Appendix F were prepared by EPA between 1980 and 1982. During the Conesville program, EPA's contractor selectively used the QA procedures contained in the November 19, 1981 draft (hereinafter "draft Appendix F") [See GCA Final Report, p.12].

[8] GCA Final Report, p.10.

Because of the difficulty that electric utility companies have experienced with CEM technology at FGD-controlled units, and in consideration of the high reliance that must be placed on CEM data when used for direct compliance purposes, the Continuous Monitoring Committee of the Utility Air Regulatory Group (UARG) endorsed the need for a CEM demonstration program such as the one at Conesville and has followed closely the progress of the Conesville project from its outset.[11] Apart from issues pertaining to the quality and degree of documentation of CEM performance during the program, UARG's primary concern has been that the data collected are properly analyzed and that the results of the project are interpreted and presented in a manner consistent with the requirements and procedures established by EPA for electric utility companies. In this regard, UARG retained Kilkelly Environmental Associates, Inc. (KEA) to examine the results and findings of the GCA Final Project Report and Final Project Summary, and to determine the supportability of such findings in terms of EPA's own program documentation, as well as supplemental information obtained through independent UARG activities.

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[9] Ibid., p.35.

[10] Ibid., p.3.

[11] Beginning with such formative activities as the initial site selection and continuing throughout the demonstration program, UARG has exchanged information with EPA, offered numerous recommendations, raised technical concerns, and sponsored various independent on-site performance assessments. A bibliography of relevant correspondence and reports is provided as Section 5.0 of this report.

This report presents the results of KEA's examination of EPA's final reports on the Conesville CEM demonstration program. Section 2 provides a general description of the Conesville test facility and the CEM systems. Section 3 discusses the degree to which the program met its stated objectives, in terms of data availability and data quality; the section also describes major disagreements/discrepancies between the findings of EPA's contractor and KEA. Section 4 presents a brief synopsis of more peripheral concerns and inconsistencies, both internal to EPA's project reports and as identified through specific UARG activities.

2.0 FACILITY AND CEM SYSTEM DESCRIPTION

The approach taken by EPA to organize and structure the activities of it CEM demonstration program was to simulate as closely as possible the act ties an electric utility company would undertake to specify, procure, install, and operate a CEM system capable of providing the SO_2 and NO_x emissions data required by Subpart Da.[12] After consideration of severa potential host facilities, Columbus and Southern Ohio Electric Company's Conesville generating station, Unit No. 6, was selected for the study. One of EPA's primary considerations in selecting the Conesville unit was its anticipated availability during the scheduled time of the demonstration.[13] Conesville Unit No. 6 is a pulverized coal electric utility bc with a gross generating capacity of 411 MWe. Air pollution control consists of two parallel electrostatic precipitator (ESP) modules followed two parallel limestone FGD modules. Although the FGD system is designec process 100 percent of the effluent flow, the unit typically bypasses ap imately 10-15 percent of the unscrubbed effluent to provide reheat.

The CEM systems chosen by EPA for this project were supplied by KVB Equipment Systems Division and were custom designed for unit-specific pi cess conditions, automatic functions, and certain reporting formats designated by EPA. The KVB CEM system can be separated into three basi units: (1) FGD inlet SO_2/O_2 measurement system, (2) FGD outlet SO_2/NO_x, measurement system, and (3) computerized data handling and system contr Sulfur dioxide emission measurements are extracted separately from each the two FGD module inlets and are transported to time-sharing Dupont SO_2 and Thermox O_2 analyzers. An average inlet concentration is calculated for each 15 minutes of monitor operation. FGD outlet $SO_2/NO_x/O_2$ concentrations are extracted from a single point in a common outlet duct, downstream of both the FGD modules and the point at which the bypass stream enters the exhaust duct. The outlet samples are transported to a Dupont SO_2 analyzer, a Thermox O_2 analyzer, and a Thermo Electron NO_x analyzer. Monitor operation, including all routine calibrations, are controlled through one dedicated computer. Signals from each inlet and outlet analyzer are processed by the computer and stored for preparation of the various emission reports.

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[12] GCA Final Report, pp.1-2.

[13] Ibid., p.31.

All on-site activities associated with routine CEM operation, maintenance, testing, and record keeping were performed or supervised by EPA'S contractor. System specification, procurement, and installation were completed by the end of April 1981. Performance Specification Tests were conducted by EPA's contractor at the end of May 1981, and routine CEM operation and data collection were initiated during June 1981 -- continuing through September 1982. During this 16-month period, the Unit No. 6 boiler operated for a total of 13 months, with the longest period of outage during September 1981 through November 1981.

3.0 CONFORMANCE WITH EPA'S STATED OBJECTIVES

Each of EPA's stated objectives of the Conesville CEM demonstration program involved evaluating CEM system performance. The primary objective concerned the achievability of the Subpart Da monitoring requirements. To meet this objective, EPA's contractor was to assess the ability of the CEM systems (once they had completed initial performance specification tests) to meet certain specific minimum data acquisition requirements (i.e., those specified in Subpart Da). EPA's secondary objectives pertained to an assessment of the ability of the CEM systems to operate within the specific daily drift and quarterly performance audit limitatins specified in draft Appendix F. The thrust of EPA's program objectives was to assess long-term data availability, although the degree to which data quality is considered differs among the objectives. That is, upon completion of the initial performance specification test, Subpart Da establishes specific data acquisition requirements without provision for data quality on a long-term basis. In addition to these requirements, Subpart Da facilities would have to comply with the QA provisions of proposed Appendix F (if promulgated), which include daily drift and quarterly performance audit limitations. Table 1 presents a listing of Subpart Da requirements as well as those contained in draft and proposed Appendix F, that are relevant to EPA's stated objectives of the Conesville CEM demonstration program. In order to analyze the data and interpret properly the results of this program, these requirements must be clearly understood.

Taken in the context described above and utilizing all of the data obtained by EPA during the program, evaluating the extent to which the CEM systems

Table 1. SUBPART Da AND APPENDIX F REQUIREMENTS RELEVANT TO THE CONESVILLE CEM DEMONSTRATION PROGRAM

Subpart Da Minimum Data Requirements for Calculating 30-day Rolling Averages
(All data emission must be in units of lb/MMBtu)

- 22 days of each 30 successive boiler operating days (BOD)*
- 18 hours out of each 24-hour BOD
- 2 fifteen-minute averages out of each hour
- Alternative monitoring or reference method testing must be performed, as necessary, to meet the minumum data acquisition requirments
- 30-day average FGD system removal efficiencies are calculated from independent FGD inlet and outlet 30-day averages

Appendix F CEM QA Requirements
(November 19, 1981 draft and as proposed on March 14, 1984)

- Drift limitations (applicable to gaseous and diluent monitors separately)

  Any single day: four times the applicable span drift

  Any five consecutive days: two times the applicable span drift (CEM considered "out of control" and corrective action is required)

- Quarterly relative accuracy audits (RAA) or calibration gas audits (CGA)

  RAA limitation: 25% of the Reference Method Values

  CGA limitation: ±10% of the cylinder gas value (November 19, 1981 draft)
  ±15% (as proposed on March 14, 1984)

- Calculation of monthly precision estimates, including upper and lower probability limits
- Unscheduled RAA or CGA (same limitations as quarterly audits) required whenever a CEM is "out of control", after corrective action and prior to reinstatement and subsequent use of the CEM data
- Alternative monitoring or reference method testing must be performed, as necessary, to achieve the minimum amount of data required by the applicable subpart during periods that the CEM is "out of control"

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*Boiler operating day is defined as any day during which fuel is combusted for the entire 24-hour period.

met the stated objectives would appear to be a straight-forward task. However, our review of GCA's final report and final project summary has revealed several instances where data are incomplete or difficult to interpret. In particular, the data contained in the GCA Program Documentation have not been analyzed in a manner consistent with the procedures contained in either Subpart Da or the draft or proposed versions of Appendix F, and it is difficult to duplicate several of the methods of analysis used by EPA's contractor. In addition, GCA's final reports do not directly assess the results of the program in the context of its stated objectives. That is, there are no concluding statements offered in regard to the ability of the Conesville CEM systems to meet the Subpart Da monitoring requirements -- nor are the results of the application of draft or proposed Appendix F QA procedures ever integrated into the overall results of the program. In terms of responding to these issues, the remainder of this section segregates our assessment of the project objectives and presents the results of our independent analysis of the data and information supplied by EPA and its contractor.

3.1 Data Availability in Terms of Subpart Da Requirements

In order to clearly understand the results of GCA's evaluation of CEM data availability, the reader must first recognize GCA's use of the term availability. Throughout its Final Report and Final Project Summary, GCA uses the term availability to describe the percent of time that the data acquisition requirement of Subpart Da were met.[14/][15/] The use of this term without

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[14/] GCA Final Report, pp.16 and 18.

[15/] GCA Final Project Summary, p.25.

qualification can be misleading and incorrectly interpreted to mean the percent of time over the stated averaging peroid that the CEM systems acquired data. As previously described in Table 1 (page 8) of this report, in order to obtain a valid 30-day rolling average [which is required by Subpart Da for each and every successive boiler operating day (BOD)], a CEM system must obtain emission data for at least 18 hours out of each 24-hour period and 22 days out of each successive 30 BODs. Therefore, in evaluating actual CEM system data availability, it is very important to distinguish clearly between the percent of time that data were obtained and the percent of time that the data acquisition requirements of Subpart Da were met. For purpose of clarity, subsequent tables in this KEA report have been retitled.

In regard to the data availability assessments presented in its Final Report and Final Project Summary, GCA calculated the percent of time that the CEM systems were able to achieve certain Subpart Da minimum data requirements over various averaging bases. The averaging bases used include (1) the total number of hours of boiler operation, (2) the total number of days of boiler operation, and (3) the total number of 30-day averages. Since Subpart Da requires the use of 30-day rolling averages, calculations that are intended to represent the percent of time that the data requirements of Subpart Da were achieved should be based on 30-day averages -- not on total hours or total days of boiler operation during the program. Therefore, the percent availability figures presented in GCA's Final Report and Final Project Summary that are based on total hours and total days of boiler operation can be misleading and are not directly relevant to the program's objectives. In our view, a more realistic method to depict CEM percent availability is on the basis of the number or percent of 30-day rolling average periods during which the CEM systems achieved the minimum data capture requirements specified in Subpart Da. That is, the Conesville data should be evaluated, using the BOD criteia of Subpart Da, to determine the number of 30-day rolling averages obtained as a function of the total number of 30-day rolling averages during the program.

Using this approach, KEA examined the data contained in the GCA Program Documentation.[16/] First, the total number of boiler operating days was calculated, using the Monthly CEMS Operating Summary tables. A compressed list of all sequential BODs was then compiled. Next, the CEM data were examined to determine for which BODs each CEM system obtained at least 18 out of 24 hours of emission data (lb/MMBtu basis). Since within-hour data were not available, no examination of the minimum number of data points per hour was made. Finally, a comparison was made between the number of 30-day rolling averages during the test program and the number of 30-day rolling average emission values obtained from each pollutant/diluent CEM system (SO_2 inlet, SO_2 outlet, and NO_x outlet). In order to compute the number of 30-day rolling average SO_2 percent removal values, KEA used the data from each BOD during which the outlet SO_2 CEM system (lb/MMBtu) met the 18 out of 24 hour requirement and during which at least one of the inlet SO_2 CEM systems met the 18 out of 24 hour requirement.

[16/] KEA's review of the GCA Program Documentation noted that portions of Monthly CEMS Operating Summary tables are incorrectly labeled. The column headings labeled and ordered "Inlet SO_2," "Inlet SO_2," "Outlet SO_2," and "SO_2 Removal" should read "Inlet SO_2," "Outlet SO_2," "Outlet NO_x," and "SO_2 Removal," respectively. This inadvertent error had been acknowledged by GCA.

As Table 2 illustrates, GCA and KEA's results differ significantly. Even after communications with EPA and GCA, and after conducting its own independent analyses, KEA has been unable to duplicate EPA's results or reconcile the differences between GCA and KEA's findings. Notwithstanding these differences, regardless of which column of numbers in Table 2 is examined, it is clear that none of the gaseous CEM systems subject to the Conesville demonstration program came close to achieving the data capture requirements of Subpart Da. It is reemphasized that the calculations represented in Table 2 accept all data obtained on face value, under the assumption that all data that were collected are valid for the purpose of determining compliance under the criteria that will be contained in EPA's final Appendix F regulations. Nonetheless, on the basis of these findings, it would appear that the Supart Da facilities will be faced with significant periods of alternative monitoring or reference method testing.

Table 2. PERCENT OF TIME THAT THE DATA ACQUISITION REQUIREMENTS OF SUBPART Da WERE ACHIEVED (BASED ON 30-DAY ROLLING AVERAGES)

Parameter	Subpart Da Requirements*	GCA Results	KEA Results
SO_2 Inlet	100%	-	49%
SO_2 Outlet	100%	67%	60%
NO_x	100%	62%	27%
SO_2 Removal Efficiency	100%	59%	45%

* Subpart Da requirements for valid 30-day average emission data each BOD are included for purposes of comparison

In addition to the difficulty KEA encountered in attempting to duplicate and interpret the results of GCA's data availability analysis (in the context of Subpart Da requirements), the following ambiguous statement is made in both abstracts to GCA's Final Report and Final Project Summary (see pp. iii and ii, respectively):

> "The reporting requirements could be met essentially 100 percent of the time due to the Method 19 Confidence Interval Reporting Method in which a confidence interval is calculated for daily data points not fulfilling minimum data capture requirements."

This statement, which was not found in previous GCA draft reports concerning the Conesville project, is a part of GCA's summary discussions of CEM availability -- although not a part of the more detailed discussions on data availability found in the full text of the GCA reports. In our view, GCA's suggestion by this statement that 100 percent of the required data were obtained through the use of the Method 19 confidence interval calculation procedures is not consistent with EPA's stated objectives of the program. In the context of evaluating the ability of the CEM systems to achieve the data acquisition requirements of Subpart Da, we believe that offering the Method 19 confidence interval calculation procedure as a means of fulfilling these requirements is not directly relevant and can be very misleading. That is, §60.47a of Subpart Da clearly specifies minimum data requirements for CEM systems, as well as provisions for alternative measurement methods during periods of CEM outage. It is KEA's understanding that these are the data availability requirements subject to EPA's evaluation during the Conesville program. We further understand that §7. of Method 19, titled "Calculation to Demonstrate Compliance When Available Monitoring Data are Less Than the Required Minimum," is intended to provide a means of estimating 30-day emission averages for infrequent situations when the minimum data requirements are not met. Since it is KEA's interpretation that §7. of Method 19 is not directly a part of, or an allowed substitute for, the data acquisition requirements of Subpart Da, we cannot agree with GCA's referral to Method 19 in the context presented in its final project reports.

3.2 Data Availability in Terms of Subpart Da and Appendix F Requirements

As discussed previously, the results given in Table 2 (page 12) of this report are restricted to CEM data availability in terms of only the requirements of Subpart Da, and were derived and without regard to data quality. It is our understanding that EPA's Appendix F QA procedures, which will apply to Subpart Da facilities, represent a set of daily drift and quarterly performance criteria for determining the validity of CEM data used for compliance purposes. Therefore, the objectives of the Conesville program concerning the application of draft Appendix F requirements were apparently intended to provide for an evaluation of the ability of commercially-available, field-proven CEM systems to produce "valid" data (as defined by draft Appendix F) on a routine basis. In consideration of these objectives, we expected to find a description of the results of the application of EPA's draft Appendix F requirements in GCA's final project reports. However, our examination of these reports revealed inconclusive findings in regard to GCA's evaluation of draft Appendix F requirements.

In terms of QA-related activities of EPA's contractor, the procedures contained in draft Appendix F were, by in large, instituted throughout the duration of the program. That is, the CEM systems had been configured to automatically perform daily zero and span checks [also required by 40 CFR

60.13(d)]. These data were used by the EPA contractor to calculate monthly precision estimates, as well as upper and lower probability precision limits for each analyzer. In addition, periodic (i.e. June and July 1981; June, July, and August 1982 -- as opposed to quarterly) relative accuracy audits (RAA) were conducted. Although the results of the precision calculations and accuracy audits are presented in GCA's final project reports, this information is never integrated into the results of the program itself. That is, it is not clear from GCA's final project reports whether or not the CEM systems consistently met the performance criteria specified in draft Appendix F. Furthermore, there is no information presented as to whether the QA procedures that were applied resulted in improved data quality and/or improved data availability.

After a detailed examination of the GCA Program Documentation, KEA determined that although most of the procedures of Appendix F may have been applied, the requirements of Appendix F were never met. Specifically (See Table 1, page 8, of this report), one of the most important aspects of Appendix F, the daily drift determinations, requires a qualitative assessment of the validity of CEM data. In this assessment, the results of daily calibration checks are used to compute monitor drift, and CEM data are invalidated if the drift exceeds specified daily and five-day limits. Also, if the five-consecutive-day limitation is exceeded, the monitor is considered to be "out of control", and corrective action and audit verification are required before the monitor can be reinstated and data subsequently used. It is noted that the daily and five-day drift limitations are the same in both EPA's draft and proposed Appendix F requirements. Although not adhered to by EPA's contractor, these qualitative requirements constitute the most rigorous data validation procedures of both draft and proposed Appendix F requirements. Therefore, KEA decided to examine the available data and attempt to assess the ability of the Conesville CEM systems to meet the Appendix F drift limitations.

Since EPA's contractor did not implement the drift-related data validation procedures, a direct assessment was not possible. That is, when the drift criteria were exceeded, GCA did not remove the monitors from service, take corrective action, and conduct a performance audit to verify that the corrective action was successful. Nonetheless, through the use of the results of the daily zero and span checks, we were able to make a rough, conservative assessment of the extent to which the CEM systems met the drift limitations.[17/] Available daily drift data were evaluated for those days during which the Subpart Da minimum data capture requirements were met. Although this examination was made for each individual pollutant and diluent monitor, valid emission values required paired, valid pollutant and diluent measurements. In essence, KEA's drift assessment began by taking the Subpart Da-related availability results presented in Table 2 (page 12) of this report and then invalidating data for those days during which the drift limitations of Appendix F were exceeded.

Specifically, KEA's application of the Appendix F drift criteria, involved invalidating emission data for each day in which a CEM drift measurement exceeded four times the applicable span drift (i.e., 10 percent of span for

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[17/] GCA's Program Documentation contains the results of the daily zero and span checks in the form of percent differences, and utilizes these data in calculating precision checks. These data were used by KEA to recompute daily drift in accordance with the span drift calculation procedures contained in the May 25, 1983 promulgated revisions to Performance Specifications 2 and 3 (48 Fed. Reg. 23608).

pollutant monitors or 2 percent O_2 or CO_2 for diluent monitors). In addition, once a CEM had exceeded twice its applicable span drift for five consecutive days, each subsequent daily measurement exhibiting greater than twice the span drift was considered invalid until the daily drift returned to within twice the span drift. When span drift data were missing from the data set, we assumed that the data obtained on these days were valid, except when such day(s) were bracketed by days during which the drift criteria were exceeded. Also, in terms of SO_2 efficiency calculations, a day of valid data was defined as a day having a valid outlet SO_2 (lb/MMBtu) average plus a valid inlet SO_2 (lb/MMBtu) average from either one or both of the inlet CEM systems. In the absence of additional information, we believe that this approach to distinguishing between valid and invalid CEM data is reasonably conservative.

The results of KEA's analysis of "valid" CEM data, in the context of the Appendix F drift limitations only, are given in Table 3, column (3).[18/] These results, also presented on the basis of 30-day rolling averages, are contrasted with column (2), which shows the results of KEA's Subpart Da data availability analysis. It is readily apparent that the application of even this limited and conservative qualitative constraint on the use of the Conesville CEM data dramatically reduces the availability of "valid" data. It is also clearly evident that none of the CEM systems in the Conesville demonstration program came close to achieving the drift requirements of draft and proposed Appendix F.

[18/] It is noted that both draft and proposed Appendix F also establish data invalidation criteria for periods subsequent to a CEM system's failure to meet the quarterly RAA and CGA limitations (See Table 1, page 8, of this report).

Table 3. PERCENT OF TIME THAT THE DATA ACQUISITION REQUIREMENTS OF SUBPART Da AND THE DRIFT LIMITATIONS OF APPENDIX F WERE ACHIEVED (BASED ON 30-DAY ROLLING AVERAGES)

Parameter	(1) Subpart Da Requirements*	(2) Acutal Results... Subpart Da Only	(3) Actual Results... Subpart Da Plus Appendix F
SO_2 Inlet	100%	49%	8%
SO_2 Outlet	100%	60%	15%
NO_x	100%	27%	5%
SO_2 Removal Efficiency	100%	45%	4%

* Subpart Da requirements for valid 30-day average emission data each BOD are included for purpose of comparison.

4.0 REMAINING TECHNICAL ISSUES

This section describes several additional issues which have an important bearing on one's interpretation of the results of the Conesville CEM demonstration program. Although each of these issues are significant, they are not as directly related to the stated objectives of the program as are the data availability issues discussed in Section 3. Most of these remaining concerns have been raised previously by KEA on behalf of UARG. Therefore, the discussions here are purposely abbreviated, and reference is made to the listing of correspondence and reports contained in Section 5.0 of this report.

4.1 Representativeness of the CEM Data

In regard to the adequacy of CEM data for determining compliance (as required by Subpart Da), since the outset of the program KEA has raised concern about the representativeness of the CEM measurements. It is well documented that the FGD outlet location from which SO_2 measurements were made is highly stratified and subject to large temporal variability. The presence of significant SO_2 stratification is acknowledged by EPA in its final program reports. However, in the context of demonstrating the feasibility of the Subpart Da monitoring requirements, this issue has essentially been ignored by EPA. Furthermore, in previous correspondence between EPA and UARG concerning this matter, the Agency has asserted that the acquisition of representative data was not one of the program's objectives.19/ Although it

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19/ Letter from George W. Walsh to F. William Brownell, May 10, 1982.

is recognized that the primary emphasis of the program may have been on demonstrating the feasibility of the data acquisition requirements of Subpart Da, the acquisition of representative data is an integral part of the Subpart Da monitoring rquirements. Apart from the fact that CEM data must be suitable for use in direct compliance assessments, Subpart Da facilities are subject to the provisions of 40 CFR 60.13(f) which states, "[a]ll continuous monitoring systems or monitoring devices shall be installed such that representative measurements of emissions or process parameters from the affected facility are obtained." Certainly, the representativeness of the effluent samples are no less important to ensuring data validity than is the accuracy of the instrumentation used to analyze the samples.

The issue of sample representativeness and the severity of stratification found at the Conesville facility points out another potentially serious problem that Subpart Da and other FGD-controlled facilities may face. As previously reported to EPA, the level of investigation by KEA into the Conesville stratification issue was significant. Notwithstanding such efforts, it seemed that regardless of the amount of stratification testing performed or the degree of statistical sophistication used to analyze the test data, a single point from which consistently representative emissions could be obtained at the FGD outlet location could not be found.

Before leaving the issue of the representativeness of single-point sampling at FGD outlet locations, it should be mentioned that EPA, in apparent recognition of the difficulty that can be encountered when sampling in a stratified effluent, adopted a three-point traverse sampling procedure for CEM relative accuracy testing in its January 26, 1981 proposed revisions to

Appendix B Performance Specifications 2 and 3, and subsequently in its May 25, 1983 promulgation of revised Appendix B (48 Fed. Reg. 23608). This recently adopted relative accuracy test procedure, in essence, attempts to combine the issues of representative sampling and relative accuracy, and implicitly assumes that a three-point traverse within a stratified effluent will adequately represent the average effluent concentration. KEA does not agree with EPA's approach of combining these independent issues through the establishment of such a test procedure. We further believe that the application of this test procedure will likely create confusion in regard to whether apparent data inaccuracies are attributable to the sampling probe location or CEM system malfunction. As reported on page 21 of this report, KEA performed concurrent single-point and three-point relative accuracy tests of the Conesville FGD outlet SO_2 CEM system -- the results of which are inconclusive.

4.2 Relative Accuracy of the SO_2 CEM Systems

During the 16-month program duration, a total of nine CEM relative accuracy tests and audits were performed -- five by EPA's contractor and four by KEA (while under contract to UARG). EPA's relative accuracy of the SO_2 and NO_x CEM systems were intended to conform to the procedures contained in the October 10, 1979 proposed revisions to Appendix B, Performance Specification (PST) 2 and 3, and its relative accuracy audits (RAAs) were structured in accordance with the procedures contained in draft Appendix F. The relative accuracy tests performed by KEA were limited to the SO_2 CEM systems. However, these tests included the procedures of both the October 10, 1979 proposed PST revisions and the Janaury 26, 1981 reproposal of PST 2 and 3 -- the differientiation being the three-point traverse sampling approach required by the January 26, 1981 reproposal, as opposed to the previous single-point sampling approach.[20]

Table 4 summarizes the results of all SO_2 relative accuracy evaluations that were performed by GCA and KEA during the program. In addition to the test results, Table 4 includes the results of KEA's analysis of the bias of the inlet and outlet SO_2 CEM systems. The purpose of examining monitor bias is to determine if the differences between CEM and reference method data are random variations, inherent in the methods themselves -- or whether such differences indicate statistically significant error (bias) in the CEM measurements.

The method used to evaluate the bias of each monitor was based on the application of a t-test on the paired differences of the monitor and reference method data. The t-test is used to determine whether the observed differences between the monitor and reference method values are merely random fluctions around zero or whether the differences are significantly different from zero. This determination is made by testing whether or not zero is contained in a confidence interval (in this case 95%) about the mean difference. If zero is within this confidence interval, then the monitor is considered to be unbiased within the precision of the measurements. If, on on the other hand, zero is not contained within the confidence interval, then the monitor is considered to be biased.

The results of the tests of the FGD inlet SO_2 CEM system indicate significant bias in the measurements during seven of the nine tests. However, the

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[20] Details of these testing activities, as well as various technical concerns regarding EPA's contractor's divergence from established test procedures, are on record with EPA (See Section 5.0 of this report) and are not restated here.

Table 4. SO_2 CEM SYSTEM RELATIVE ACCURACY SUMMARY CONESVILLE UNIT NO. 6

	Outlet Monitor Single-Point Relative Accuracy (lb. SO_2/MMBtu)					Outlet Monitor 3-Point Relative Accuracy (lb. SO_2/MMBtu)					Inlet Monitor Single-Point – Combined (lb. SO_2/MMBtu)				
	No. of Valid Runs	Mean Diff.	95% Conf. Interval	Relative Accuracy	Monitor Biased	No. of Valid Runs	Mean Diff.	95% Conf. Interval	Relative Accuracy	Monitor Biased	No. of Valid Runs	Mean Diff.	95% Conf. Interval	Relative Accuracy	Monitor Biased
June 1981 Initial GCA	9	0.19	0.17	15.6	YES - HIGH		—	—	—	—	9	0.26	0.20	6.3	YES - HIGH
July 1981 GCA	6	0.25	0.08	16.9	YES - HIGH		—	—	—	—	6	0.93	0.12	15.0	YES - HIGH
August 1981 KEA	12	-0.28	0.12	18.7	YES - LOW	11	-0.04	0.05	4.6	NO	10	0.49	0.15	9.4	YES - HIGH
March 1982 KEA	10	0.18	0.10	23.3	YES - HIGH	10	0.17	0.26	35.2	NO	8	-1.36	1.59	40.6	NO
June 1982 GCA	11	-0.12	0.03	12.8	YES - LOW		—	—	—	—	7	0.17	0.42	7.8	NO
July 1982 GCA	6	0.03	0.04	14.2	YES - HIGH		—	—	—	—	6	0.39	0.21	9.4	YES - HIGH
July 1982 KEA	12	0.06	0.03	30.3	YES - HIGH	12	-0.33	0.1	65	YES - LOW	12	0.28	0.15	6.6	YES - HIGH
August 1982 KEA	12	0.14	0.06	31.1	YES - HIGH	11	-0.09	0.22	34.8	NO	10	0.75	0.01	12.8	YES - HIGH
August 1982 GCA	12	0.00	0.02	4.8	NO		—	—	—	—	9	0.45	0.13	9.8	YES - HIGH

inlet SO_2 monitors were able to achieve the 20 percent accuracy specification during eight out of the nine tests. It is interesting to note that the worse relative accuracy was found during one of the two tests that the monitor's measurements were considered unbiased.

In regard to the FGD outlet SO_2 CEM system, the results of the single-point tests indicate that this system's measurements were biased during eight out of nine tests. However, as with the inlet monitors, the outlet SO_2 monitor was able to achieve the 20 percent relative accuracy specification during six of the nine tests. Furthermore, the results of three of the four 3-point, traverse-based tests indicate that this same outlet SO_2 system was unbiased. However, during two of the 3-point tests, the CEM system failed to meet the 20 percent relative accuracy specification. In light of such information, it is difficult to determine the extent to which the outlet SO_2 CEM system was able to produce valid (in terms of accuracy) emissions data.

It was recognized that the use of the 3-point relative accuracy test procedure in such a highly stratified stream could be adding confusion to one's interpretation of the accuracy of the SO_2 monitoring system. Therefore, KEA decided to examine the August 1981 test results and compute the apparent bias of the monitor according to the results of both the single-point and 3-point tests. Since the single-point and 3-point tests were performed concurrently, this analysis allows one to separate location-related bias from monitor-related bias. Table 5 presents the results of these computations.

As shown by Table 5, the CEM system appears to be unbiased when compared to the three-point reference method data. However, the CEM system actually

Table 5. COMPARISON OF LOCATION AND MONITOR BIAS - BASED ON KEA'S AUGUST 1981 TEST RESULTS

	MEAN DIFFERENCE (lb/MMBtu)	CI_{95}	BIAS
Location Bias:			
Single-point Reference Test versus Three-point Reference Test	0.29	0.05	YES - HIGH
Monitor Bias:			
Outlet SO_2 CEM System versus Single-point Reference Test	-0.28	0.12	YES - LOW
Combined Bias:			
Outlet SO_2 CEM System versus Three-point Reference Tests	-0.04	0.05	NO

exhibited a negative bias of -0.28 lb/MMBtu, which happened to be offset by a positive location-related bias of 0.29 lb/MMBtu. In that stratification within an outlet FGD duct is subject to temporal variability, such a coincidental offset between location and monitor bias cannot be assumed to remain constant.

4.3 Miscellaneous Concerns

In addition to those items most directly related to the objectives of the Conesville program, our examination of GCA's final project reports has revealed several additional issues that are pertinent to the reported results of the Conesville CEM demonstration program. The following paragraphs briefly enumerate these concerns.

- Resource requirements during CEM outage --

  In its reported assessment of the economic impact of CEM programs such as that initiated at Conesville, GCA did not evaluate the impact of alternative monitoring or reference method testing that is required by Subpart Da during periods of excessive CEM outage. There were 237 BODs during the Conesville project and 208 30-day rolling averages (as defined by Subpart Da). Table 6 describes the number of days and the number of 30-day rolling averages during which the data acquisition requirements of Subpart Da were not met. As shown in this table, the poor availability of Conesville CEM systems would have necessitated alternative monitoring or continuous reference method testing during much of the evaluation period. Certainly, such supplemental data acquisition would have been costly had EPA's contractor conformed to the requirements of Subpart Da -- much less those of draft or proposed Appendix F (*See* Table 3, page 16, of this report). We believe that this issue should have been acknowledged in GCA's final project reports and should have been an important consideration in its economic assessment of Subpart Da and draft Appendix F requirements.

Table 6. TWENTY-FOUR AND 30-DAY ROLLING AVERAGES THAT DID NOT MEET THE DATA ACQUISITION REQUIREMENTS OF SUBPART Da

	24-Hour Averages		30-Day Rolling Averages	
Parameter	Actual Results... Subpart Da Requirements	Percent of Total	Actual Results... Subpart Da Requirements	Percent of Total
SO_2 Inlet	71	30%	107	51%
SO_2 Outlet	67	28%	83	40%
NO_x	98	41%	151	73%
SO_2 Removal Efficiency	--	--	114	55%

- In its final project reports, GCA contends that the quarterly reports required by Subpart Da were prepared as part of the demonstration project. However, GCA's Program Documentation report only lists data summaries (e.g., emission data, drift data and precision estimates, and RAA data). Subpart Da requires explanations for days when less than 18 hours of emission data are obtained, justification for missing data, and corrective action taken. Likewise, for any 30-day rolling average containing less than 22 days of data, the following are required: (1) number of hourly averages obtained for inlet and outlet emission rates, (2) standard deviations and confidence limits for inlet and outlet emission rates, (3) potential combustion concentration, and (4) ratio of upper confidence limit for average outlet emission rate of allowable emission rate. As shown by Table 6, because of the large number of 24-hour and 30-day rolling averages which did not meet the data requirement of Subpart Da, the time and cost required to prepare the reports required by Subpart Da would have been considerably more than that reported by GCA.

- In its final project reports, GCA states that it used the test procedures contained in the October 10, 1979 proposed Performance Specifications 2 and 3 when evaluating the relative accuracy of the CEM systems. However, as previously reported to EPA by UARG,[21] many of these procedures departed significantly from those required by EPA's CEM performance specifications, as well as the Reference Test Methods contained in Appendix A to 40 CFR 60. For example, Reference Method sampling during all CEM relative accuracy testing at the FGD outlet monitor probe location were extracted from the monitor sample transport line, instead of being extracted from a point adjacent to the CEM probe in the outlet effluent. Such an approach, which bypasses certain portions of the CEM system, is inconsistent with EPA's PST procedures and can introduce undetectable errors in the test results. Another departure from EPA-prescribed procedures was GCA's not adhering to the leak check procedures of Reference Method 6, having potential to allow significant leaks in the sampling system to go undetected. Although the impact of procedural deficiencies such as these is not known, they tend to cast a shadow of uncertainty on the relative accuracy results presented in GCA's final project reports.

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[21] "Volume I and II: EPA Field Testing During May-June 1981 at the Conesville, A.B. Brown, and Pleasants Electric Utility Generating Stations -- Status Report," Kilkelly Environmental Associates, Inc., July 1981.

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Letter from W. Kuykendal (U.S. EPA) to K. Newsome (VEPCO), March 6, 1981.

Chairman Rostenkowski. Any questions?

Mr. Gregg?

Mr. Gregg. I appreciate our colleagues testifying before us. We have discussed this issue before at length.

I am interested, however, in the issue of rates and competitiveness. Do you accept basically the premise that sulfur emissions and nitrogen emissions are toxic and have a negative impact on the environment?

Mr. Coats. Well, I think there is some evidence to show as the representative from the EPA testified earlier, that those emissions are precursors to acid rain deposition. However, what is unknown is the extent to which they contribute to the problem and just what the other precursors are and how all those mix together—there are just so many unknowns out there.

But I don't think anyone would make the statement, based on the scientific evidence we now have that they don't make some contribution to the problem we are facing; and so we ought to be looking for a solution.

That is why the Congress adopted the Clean Air Act in 1970 and that is why we fund a substantial amount of money in the clean coal technology every year when the appropriation comes up.

Mr. Gregg. You may not be aware of it, but this bill not only addresses acid precipitation, it addresses acid aerosols, it addresses ozone, it addresses the particulate sulfates. It is not just an acid rain bill, it is an attempt to get at all the toxic chemicals being put in the air.

The Clean Air Act just addresses the ambient air standards in the area of the plants, it does not address long-range transmission.

I guess my question would be if we were to fill up a tank truck, for example, with sulfur, sulfur coming from those plants, and we were to drive it to New England and dump it in the lake of a New England community or dump it in a lake of a Florida or North Carolina community, would that be an event that we should regulate?

Mr. Coats. Well, I think that somewhat begs the question.

We don't know for sure that the transportability of these emissions are in terms of just where they end up. There is a great deal of uncertainty as to how far they are transmitted, in what concentrations they are transmitted, how much they mix with local contributions to air emissions problems—and I think until we have these answers, we really can't fashion a proper solution to the problem.

There is a great deal of uncertainty as to who is contributing what to where.

Mr. Gregg. I know that is a position of many folks who participate in the issue from the Midwest. The National Academy of Sciences report says there is a lineal relationship between what goes up and what comes down. On the issue of reduction, we are still as a nation producing ten times the amount of sulfur emissions of any other industrialized nation. The projections of the EPA are that we have gone on a graph that would show a line going down and then it would go flat at 20 million tons and stay flat and possibly start going back up.

I don't see where we can argue that we are addressing the problem anywhere other than at the margin?

Mr. COATS. No. 1, we have a great deal more industrial capacity than any other nation, so it is true our gross volume of emissions is greater, but we also have a significantly greater industrial capacity and a greater demand for electricity.

I think we are glad to have that because it has given us a higher standard of living.

Second, in terms of dealing with the problem, I don't think any of us is assuming a static solution. We are simply saying let's get all the evidence in before we propose additional solutions to what is already taking place.

Under the new source performance standards imposed by the Clean Air Act as new plants come on line these reductions will continue to decrease. Hopefully, we will achieve promising breakthroughs in clean coal technology so that we can reduce these emissions.

I don't think anybody wants to sit here and advocate pouring toxic emissions into the air. We want to try to find the most feasible economic and socially acceptable means of dealing with the problem.

Mr. GREGG. I would just note that the combined emissions of Canada, Germany, France, England, Japan, and all other European nations is less than what we are emitting as a nation.

On the issue of clean coal, I am not sure that I understand the market place theory that you are working under. Basically, most of the clean coal technology activity going on now is being funded by the public sector either at the State level in Ohio or at the Federal level through the EPA.

It would seem to me that if we put in place a system of economic incentives, we would create a demand in the private sector to start producing clean coal technology. That would seem to be basic economics, and if you have got a demand created by an incentive, which is basically the tax, you are going to generate responses, whether they are clean coal or whether they happen to be some other type of boiler system or scrubbers. I don't see why you feel that clean coal would be shut off to investment.

It seems to me it would be an attractive investment for the private sector.

Mr. OXLEY. The problem with that is this bill would force an immediate shift which would basically leave the clean coal technology in the lurch. It is a strong disincentive for any further research to be done in the clean coal area.

Mr. GREGG. You would accept this bill if we phased it in over a few more years?

Mr. OXLEY. In response to your point, you asked earlier whether we would have clean coal technology anyway driven by market forces, and the answer is "No," under your bill.

I notice in the bill you call for, under sulfur dioxide emissions, a tax rate of 15 cents, based on emissions of at least 0.6 but less than 1.2.

It is my understanding that the new source limits are at 1.2, so that even if the particular source was emanating emissions below 1.2, they would still be taxed at the rate of 15 cents.

I hardly think that provides an incentive for reasonable emission control. As a matter of fact, it is the opposite.

It seems to me that it is unfair to assume that your area of the country should receive the benefits of this type of legislation, where you are basically asking the ratepayers of the midwest to pay for the benefits that would be accruing to areas in the Northeast.

[The following was subsequently received.]

MICHAEL G. OXLEY
4TH DISTRICT, OHIO

COMMITTEE ON
ENERGY AND COMMERCE

SELECT COMMITTEE ON
NARCOTICS ABUSE AND CONTROL

CONGRESSIONAL RURAL CAUCUS

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October 8, 1987

The Honorable Judd Gregg
U.S. House of Representatives
308 Cannon House Office Building
Washington, D.C. 20515

Dear Judd:

I appreciated the opportunity to share my views on your bill -- H.R. 2497 -- with you and the other Members of the Committee on Ways and Means. Time constraints, however, prevented us from completing our discussion on the relationship between the sulfur dioxide (SO_2) New Source Performance Standards (NSPSs) applicable to different electric utility sources and the emission level your bill uses to calculate an emission tax on those sources. Hopefully this letter will clear up any confusion you may have regarding my position.

Because H.R. 2497 would impose a tax on electric utility SO_2 emissions above .6 pound per million British Thermal Units (lb./MM Btu), I commented that many sources complying with a 1.2 lb./MM Btu NSPS would be forced to pay a tax. You indicated that your tax would be imposed only on emissions in excess of the SO_2 NSPS, which you believed to be .6 lb./MM Btu. Our misunderstanding at the hearing, therefore, was over the emission level required by EPA's NSPSs for electric utilities. My understanding of these requirements is as follows:

- Sources constructed prior to August 17, 1971, are not subject to NSPSs; instead they are subject to requirements in State Implementation Plans (SIPs). Most of these sources have an allowable emission rate that is greater than .6 lb./MM Btu. These sources are commonly referred to as SIP units, and they currently make up about 74% of the fossil fuel-fired electric generating capacity of the Nation.
- Utility sources built between August 17, 1971 and September 18, 1978 are subject to a SO_2 NSPS of 1.2 lb./MM Btu. *See* 40 C.F.R. Section 60.43. These sources are referred to as Subpart D units, and they currently make up about 23% of the fossil fuel-fired electric generating capacity of the Nation.
- Finally, sources built after September 18, 1978 are subject to a SO_2 NSPS of: (1) .6 lb./MM Btu or below if they burn coal with a sulfur content of 6 pounds or below; (2) .6 to 1.2 lb./MM Btu if they burn coal with a sulfur content between 6 and 12 pounds; or (3) 1.2 lb./MM Btu if they burn coal with a sulfur content greater than 12 pounds. In other words, these units must achieve at least 70 to 90 percent sulfur removal and emit less than a 1.2 lb./MM Btu ceiling.

See 40 C.F.R. Section 60.43a. These sources are called Subpart Da units, and they currently make up about 3% of the fossil fuel-fired electric generating capacity of the Nation. As SIP units are retired or substantially modified, the replacement or modified units will be subject to the percent removal NSPS for Subpart Da units.

In light of my understanding of the NSPSs applicable to different electric utility units, I believe that your bill would in fact impose a tax on many Subpart D and Da units that would be in compliance with their applicable NSPS. The tax should not, therefore, be characterized as applying only when sources exceed their NSPS.

In closing, as I indicated at the hearing, I oppose your bill for several reasons. As a tax, it is inappropriate and punitive. As an acid rain bill, it lacks a scientific basis and is unnecessary. I believe that the findings in the recently published Interim Assessment of the National Acid Precipitation Assessment Program -- the ten-year Federal Research Program Congress created in 1980 -- support my position. Finally, as to the development and implementation of new clean coal technologies (which seem to be the best way of continuing the downward trend in SO_2 emissions), your bill would mortally wound this important R&D effort.

Again, I appreciated the opportunity to testify at the hearing. I respectfully request that this letter be made part of the hearing's record.

Sincerely,

Michael G. Oxley
Member, Committee on
Energy and Commerce

cc: The Honorable John J. Duncan
Ranking Minority Member,
Committee on Ways and Means

Mr. **Gregg**. Of course, the problem now is in my region and most of the east coast is now receiving the detriment of the problem. Just for the record, the new source standards are set at 0.6 and that is why we picked the 0.6.

I yield back the balance of my time.

Chairman **Rostenkowski**. Any further questions?

Thank you very much, gentlemen.

Mr. John Mead, the Director of the office of coal development and marketing, and Mr. William Badger, Committee on Electricity Commissioners, Maryland Public Service Commission.

Welcome, gentlemen.

Mr. Mead, if you are ready to deliver your testimony, the committee is ready to receive it.

STATEMENTS OF JOHN S. MEAD, DIRECTOR, OFFICE OF COAL DEVELOPMENT AND MARKETING, ILLINOIS DEPARTMENT OF ENERGY AND NATURAL RESOURCES

Mr. **Mead**. Thank you. My name is John Mead. I am the director of the office of coal development and marketing for the State of Illinois, Department of Energy and Natural Resources.

My agency is the lead department for energy development and utilization issues. We maintain the State's clean coal technology development program, and in addition do substantial basic coal research.

We also evaluate the economic impacts of new regulations and new legislation.

Because Illinois is a major industrial center, and a lead coal producer, our State government has responded to the problems of air pollution through a strong program of financial support for clean coal technology development. I would like to make some comments on the cost to the consumer, the cost to the coal industry of this legislation.

I think there are others who will testify later today that will have much more to say about those costs. I would like to offer, if any, insights this morning really concentrating on the effects of this legislation on the development of innovative clean coal technologies.

I think this is an area that is extremely important to this country and one where we can act to achieve cleaner air and real competitiveness worldwide with new technology development. The concept of emission tax has an intuitive appeal.

It offers compliance or a penalty for noncompliance and a means to pay for those with a minimum of externalized costs. In practice, however, it is very difficult to implement as has been discussed earlier today, and we in Illinois find that the costs of H.R. 2497 in practice will be very high to the State.

Let me speak briefly about the cost to the consumer, the cost to the coal industry.

The tax liability, as written in this bill, would impose increased costs to utilities ranging from 6 to 47 percent. The lowest cost would accrue to the Commonwealth Edison Co., serving the northern part of the State. It is ironic in a sense that they would incur any cost because of the substantial reduction in air pollution that

that company has achieved at great cost to its consumers over the past 10 years, and I might add, at significant cost to the Illinois coal industry.

Commonwealth Edison today burns Illinois coal in only one powerplant. Its other facilities have either switched to low sulfur coal or are now nuclear, and yet it is a company that would face a tax cost of over a magnitude of $100 million under this legislation. Our downstate utilities would incur the highest costs of compliance.

These are companies, one in particular, that has seen substantial rate increases just this summer under the tax, a rate increase far in excess of double what they saw this summer would occur. This is, incidentally, in an area of the State that is already economically depressed because of the farm economy and because of the situation in the coal industry.

These observations of the potential tax liabilities, I believe are important because electric utilities could choose to accept the tax rather than go to other strategies for reducing emissions and avoiding the tax.

The regulatory climate in Illinois and other States makes a direct passthrough of such a tax to customers much easier than the alternatives of developing new technology or even coal switching.

However, I think it has to be recognized that utilities would choose a strategy of both some tax payment and coal switching and technology development.

Given the time frame established by the legislation, the least costly, near-term solution would probably be a massive fuel switching to compliance coal mostly from the Western States. That would result in a large shift of coal production and have a serious economic effect on Illinois. The proposals could cost the Illinois economy a loss of 8,000 jobs in the coal mining industry, translating to a direct cost of $900 million in coal sales. The multiplier we have determined is a factor of two to three in terms of decreases in our coal industry. The greater the dollars not spent on the tax liability and dollars that would be spent on coal switching would be going to the low sulfur coal producing regions and to transportation.

Clearly our choice in passing such a bill would be the imposition of current technology, but that is a very great cost to utilities. A major problem for us is that the control of NO_x at many of our power stations is not achievable under current technology in this country. Cyclone boilers common in Illinois are not amenable to the retrofitting that is now available.

The alternative is clean coal technology. I am very concerned that the time frame set in this bill does not offer the time to bring these clean coal technologies, these cheaper retrofitting alternatives, into commercial availability. We are currently participating with the U.S. Government in the clean coal technology program.

Our own project is one of the nearest term, the fastest track of all nine projects. It is a retrofitting project, and it will not be commercially available—if it works—for at least 5 years, and it is probably on the fastest track of all of these emerging technologies.

The midnineties is the soonest we will see the result of clean coal. I think the payoff will be very big then. In the meantime, if we are forced to switch at these facilities that could use clean coal technology, the hopes, the market for them, just won't be there.

I thank you, Mr. Chairman, and members of the committee.

[The statement of Mr. Mead follows:]

Statement of John S. Mead
Director, Office of Coal Development and Marketing,
Illinois Department of Energy and Natural Resources
on

H.R. 2497,-The "Sulfur and Nitrogen Emissions Tax Act of 1987"

Before
The House Ways and Means Committee
The Honorable Dan Rostenkowski, Chairman
September 9, 1987

Mr. Chairman and members of the Committee, my name is John Mead and I am the Director of Coal Development and Marketing for the Illinois Department of Energy and Natural Resources. IDENR is the State of Illinois' lead agency for energy development and utilization issues including the research, development and demonstration of clean coal technologies, the forecasting of electric utility trends, as well as the assessment of the economic effects of environmental and public utility regulations.

Because Illinois is a major industrial center and a leading coal producer, our State government has responded to the problems of air pollution through the strong financial support of innovative clean coal technology development. Illinois' $70 million investment in SO_2 and NO_x control R & D has resulted in millions of tons per year of Illinois coal being burned with clean technologies that did not exist ten years ago. Further development and demonstration remains to be accomplished in the coming years if technology is to be the key to additional emission reductions.

The concept of the emission tax has an intuitive appeal: it offers compliance (or a penalty for noncompliance) and the means to pay for compliance without extensive regulations or externalized costs. In practice , however, an emission excise tax like the one described in H.R. 2497 would be a very expensive method of achieving acid rain control.

The ultimate cost of H.R. 2497 must be considered both from the stand point of significant increases in the cost of electricity that would almost immediately be imposed on industrial, commercial and residential users and from the standpoint of the lost opportunities to apply emerging clean coal technologies to our national electric generating base.

The High Cost of H.R. 2497
H.R. 2497 is likely to increase overall utility bills dramatically in Illinois. It is estimated that if two downstate Illinois utilities did nothing more than pay the tax liability proposed by H.R. 2497, revenues would have to be increased by 45 to 50 percent. In comparison, other acid rain proposals such as H.R. 4567 and S. 316 would require revenue increases of 20 to 25 percent for these same two utilities. For an overall tax impact of H.R. 2497, see Tables 1, 2 and 3. Table 1 lists the Illinois coal-fired generating stations and their respective SO_2 and NO_x tax liabilities in 1991. These figures are based on the assumption that the utilities would do nothing to avoid the tax. Table 2 compares the total tax liability of each utility and the percentage increase in revenue necessary to cover the tax liability. As shown, revenues would have to be increased from 6 percent to 64 percent, with most ~~of the~~ burden placed on downstate utilities. Table 3 lists the Illinois stations and their respective cost on a per ton basis. The

dollars of tax liability per ton of total pollutants varies from $500 to $1,800, with a state-wide average of $1,548. Commonwealth Edison Company, a utility that reduced air emissions from coal at tremendous expense in the 1970's and early 80's, would have SO_2 and NO_x tax liabilities of over $160 million per year for generating stations that have already switched to low sulfur coal.

These observations of potential tax liabilities are important because electric utilities may frequently choose to accept the tax rather than reduce emissions. The regulatory climate in Illinois and other states could make a direct pass through of the tax to customers much easier alternative than recovering the costs of a compliance fuel, or new equipment.

A look at the cost of meeting H.R. 2497 using emission control strategies offers little relief to either the Illinois consumer or the Illinois coal producer. Given the time frame established by the legislation, the least cost near-term solution would be massive fuel switching to compliance coal, or lower sulfur coal by the electric utilities to reduce their SO_2 emissions and the SO_2 tax liability. This would result in a large shift in coal production and have a serious economic impact on Illinois. Analysis of other less stringent acid rain proposals indicate reductions of 30 to 40 percent of current levels of coal production. This proposal would have even more severe impacts and could cost the Illinois economy a loss of 8,000 jobs and lost coal revenue of $900 million. In addition, if the trust fund could be used for the purchase of compliance coals, even greater coal switching would be encouraged. The dollars not spent on the tax liability would instead be going to the purchase of low sulfur coal and rail transportation.

H.R. 2497 sets defacto SO_2 and NO_x standards, that in many cases, may be difficult to meet with available control technologies. If Illinois utilities were to install control technologies to meet the lowest marginal tax rate of this proposal, the tax liability is estimated to be $150 million. This is because there are a limited number of control technologies that can adequately achieve an emission rate that would avoid the tax. The annualized levelized cost of SO_2 reductions to meet a 1.2 plant-by-plant standard in Illinois is estimated at $310 million.

There are no commercially available technologies to remove NO_x emissions at many boilers located in the Illinois coal market. Of major concern is the high NO_x tax burden that will be placed on cyclone coal-fired boilers. The four largest cyclone boilers located in Illinois would have a tax burden of about $192 million annually, with no NO_x control technologies commercially available for the necessary retrofits. Based on current projections of the cost of innovative NO_x control technology in the 1990's, it will cost up to $400 million annually to lower NO_x levels to a point that avoids tax liability.

The Effect of H.R. 2497 on the Development of Cost Effective Clean Coal Technologies

The State of Illinois is a leader in the support of innovative SO_2 and NO_x control technologies. IDENR's coal R & D programs have contributed over $70 million to projects designed to help solve the air pollution problems associated with high sulfur coal. This represents the largest investment in clean coal technology of any state. When the cost-sharing contributions of private industry and the federal government are included, Illinois clean coal projects total over $500 million. This commitment to new coal technologies has now been dramatically enhanced with the establishment of clean coal programs in other states and the creation of the federal Clean Coal Technology Reserve.

The promise of these clean coal technology programs is that significantly more cost effective SO_2 and NO_x control techniques (that can be applied to existing high emission boilers) will be tested and commercially proven. Such innovations would then form the technological foundation for lower air pollution levels in North America. However, most of these technologies, if proven, will not-be available for commercial application until the mid to late 1990's.

H.R. 2497 could have a devastating impact on capital investments in Clean Coal Technology projects both nationally and internationally. If passed into law, the bill would favor coal switching as opposed to technological solutions to the problem. One future prospect for the U.S. balance of trade problem is the sale of U.S. coals in conjunction with clean coal technologies. However, if these projects are not proven in the U.S., then they will not be available for future application.

Even the federal clean coal projects that are on a fast track toward commercialization would not be available to utilities or large industrial coal users until several years after the SO_2 and NO_x taxes would be in full effect. A USDOE - State of Illinois - Gas Research Institute project that will demonstrate low cost retrofit technology for SO_2/NO_x control, is at least five years away from being available for commercial orders. By that time a substantial number of large boiler operators may have already made the decision to pay the costs of immediate fuel switching; costs that for electric utilities may be relatively easy to pass through to the consumer.

In conclusion, while H.R. 2497 may be an effective revenue raising measure and may also reduce emissions of SO_2 and NO_x, it will do so at a high cost to Illinois consumers. It will also impose de facto emission reductions without the full benefit of the innovative clean coal technologies that will be critical to our high sulfur coal industry.

TABLE 1
ANALYSIS OF H.R. 2497
COST TO ILLINOIS UTILITIES
1991 TAX LIABILITY
BASED ON 1986 DATA

STATION	1986 COAL CONSUMPTION	%/S	BTU/LB	LBS./SO2 MMBTU	TONS OF SO2	LBS./NOx MMBTU	TONS OF NOx	SO2 TAX $/LB	SO2 TAX ($)	NOx TAX $/LB	NOx TAX ($)	TOTAL TAX ($)
Duck Creek	778,000	3.43	10,563	1.200	9,862	0.70	5,753	0.15	2,958,485	0.10	1,150,522	4,109,007
Edwards	1,308,000	0.91	13,074	1.357	23,210	0.80	13,681	0.30	13,926,276	0.25	6,840,317	20,766,593
Coffeen	1,910,000	3.74	10,484	6.956	139,296	1.76	35,243	0.45	125,366,670	0.45	31,718,713	157,085,383
Grand Tower	337,000	2.82	11,525	4.771	18,532	0.94	3,651	0.45	16,678,467	0.25	1,825,445	18,503,912
Hutsonville	481,000	2.55	11,140	4.464	23,918	0.94	5,037	0.45	21,525,953	0.25	2,518,420	24,044,372
Meredosia	575,000	2.51	11,422	4.285	28,143	0.93	6,108	0.45	25,329,038	0.25	3,053,957	28,382,995
Newton	1,350,000	1.76	11,606	0.650	10,184	0.68	10,654	0.15	3,055,280	0.10	2,130,862	5,186,141
Crawford	781,000	0.46	9,576	0.937	7,006	0.79	5,908	0.15	2,101,671	0.25	2,954,148	5,055,819
Fisk	336,000	0.46	9,575	0.937	3,014	1.00	3,217	0.15	904,176	0.25	1,608,600	2,512,776
Joliet	2,491,000	0.47	9,520	0.963	22,830	1.06	25,137	0.15	6,849,005	0.25	12,568,590	19,417,594
Kincaid	2,696,000	3.36	10,268	6.381	176,642	1.80	49,829	0.45	158,977,728	0.45	44,845,695	203,823,423
Powerton	3,115,000	0.45	9,433	0.930	27,334	1.97	57,886	0.15	8,200,238	0.45	52,097,469	60,297,706
Waukegan	1,235,000	0.47	9,532	0.961	11,319	0.95	11,183	0.15	3,395,633	0.25	5,591,710	8,987,342
Will County	1,763,000	0.46	9,532	0.941	15,814	1.40	23,527	0.15	4,744,233	0.45	21,174,194	25,918,427
Joppa	2,369,000	1.98	11,682	3.305	91,467	0.90	24,907	0.45	82,320,381	0.25	12,453,596	94,773,977
Baldwin	4,744,000	2.80	10,844	5.035	259,022	1.36	69,964	0.45	233,120,160	0.45	62,967,378	296,087,538
Havana	691,000	0.64	12,397	1.007	8,624	0.84	7,196	0.15	2,587,104	0.25	3,597,857	6,184,961
Hennepin	863,000	2.83	10,812	5.104	47,625	0.70	6,532	0.45	42,862,190	0.10	1,306,306	44,168,495
Vermilion	630,000	2.28	10,768	4.129	28,010	0.70	4,749	0.45	25,208,820	0.10	949,738	26,158,558
Wood River	741,000	0.86	12,192	1.375	12,427	0.66	5,963	0.30	7,455,942	0.10	1,192,524	8,648,466
Marion	723,000	3.20	10,633	5.900	45,357	1.75	13,453	0.45	40,821,469	0.45	12,108,063	52,929,532
Dallman	738,000	2.89	10,344	2.366	18,062	1.10	8,397	0.45	16,255,567	0.25	4,198,630	20,454,197
Lakeside	78,000	2.89	10,343	5.449	4,396	1.78	1,436	0.45	3,956,121	0.45	1,292,420	5,248,541
TOTAL	30,733,000				1,032,093		399,410		848,600,604		290,145,151	1,138,745,755

TABLE 2
ANALYSIS OF H.R. 2497
ILLINOIS UTILITY COSTS
1991 TAX LIABILITY
1986 DATA

STATION	SO2 TAX ($)	NOx TAX ($)	TOTAL TAX ($)	REVENUE INCREASE (%)
Duck Creek	2,958,485	1,150,522	4,109,007	
Edwards	13,926,276	6,840,317	20,766,593	
Total CILCO	16,884,761	7,990,839	24,875,600	8.4
Coffeen	125,366,670	31,718,713	157,085,383	
Grand Tower	16,678,467	1,825,445	18,503,912	
Hutsonville	21,525,953	2,518,420	24,044,372	
Meredosia	25,329,038	3,053,957	28,382,995	
Newton	3,055,280	2,130,862	5,186,142	
Total CIPS	191,955,407	41,247,396	233,202,803	47.2
Crawford	2,101,671	2,954,148	5,055,819	
Fisk	904,176	1,608,600	2,512,776	
Joliet	6,849,005	12,568,590	19,417,594	
Kincaid	158,977,728	44,845,695	203,823,423	
Powerton	8,200,238	52,097,469	60,297,706	
Waukegan	3,395,633	5,591,710	8,987,343	
Will County	4,744,233	21,174,194	25,918,427	
Total COMED	185,172,683	140,840,406	326,013,088	6.0
Joppa	82,320,381	12,453,596	94,773,977	
Total EEI	82,320,381	12,453,596	94,773,977	64.4
Baldwin	233,120,160	62,967,378	296,087,538	
Havana	2,587,104	3,597,857	6,184,961	
Hennepin	42,862,190	1,306,306	44,168,495	
Vermilion	25,208,820	949,738	26,158,558	
Wood River	7,455,942	1,192,524	8,648,466	
Total ILPWR	311,234,216	70,013,803	381,248,019	47.4
Marion	40,821,469	12,108,063	52,929,532	
Total SIPCO	40,821,469	12,108,063	52,929,532	N.A.
Dallman	16,255,567	4,198,630	20,454,197	
Lakeside	3,956,121	1,292,420	5,248,541	
Total CWLP	20,211,688	5,491,050	25,702,738	32.0
GRAND TOTAL	848,600,604	290,145,153	1,138,745,757	15.3

TABLE 3
ANALYSIS OF H.R. 2497
COST TO ILLINOIS UTILITIES
$ PER TON OF POLLUTANT REMOVED

STATION	TONS OF SO2	TONS OF NOx	SO2 TAX ($/TON)	NOx TAX ($/TON)	TOTAL TAX ($/TON)
Duck Creek	9,862	5,753	300.00	200.00	500.00
Edwards	23,210	13,681	600.00	500.00	1,100.00
Coffeen	139,296	35,243	900.00	900.00	1,800.00
Grand Tower	18,532	3,651	900.00	500.00	1,400.00
Hutsonville	23,918	5,037	900.00	500.00	1,400.00
Meredosia	28,143	6,108	900.00	500.00	1,400.00
Newton	10,184	10,654	300.00	200.00	500.00
Crawford	7,006	5,908	300.00	500.00	800.00
Fisk	3,014	3,217	300.00	500.00	800.00
Joliet	22,830	25,137	300.00	500.00	800.00
Kincaid	176,642	49,829	900.00	900.00	1,800.00
Powerton	27,334	57,886	300.00	900.00	1,200.00
Waukegan	11,319	11,183	300.00	500.00	800.00
Will County	15,814	23,527	300.00	900.00	1,200.00
Joppa	91,467	24,907	900.00	500.00	1,400.00
Baldwin	259,022	69,964	900.00	900.00	1,800.00
Havana	8,624	7,196	300.00	500.00	800.00
Hennepin	47,625	6,532	900.00	200.00	1,100.00
Vermilion	28,010	4,749	900.00	200.00	1,100.00
Wood River	12,427	5,963	600.00	200.00	800.00
Marion	45,357	13,453	900.00	900.00	1,800.00
Dallman	18,062	8,397	900.00	500.00	1,400.00
Lakeside	4,396	1,436	900.00	900.00	1,800.00
TOTAL	1,032,093	399,410	822.00	726.00	1,548.00

STATEMENT OF WILLIAM A. BADGER, VICE CHAIR, COMMITTEE ON ELECTRICITY, NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS

Mr. **Badger**. Mr. Chairman, and members of the committee, I am William Badger, a commissioner on the Maryland Public Service Commission and vice chair of the Committee on Electricity of the National Association of Regulatory Utility Commissioners, commonly referred to as the NARUC, on whose behalf I appear today. Accompanying me today is John Flumerfelt, the NARUC director of congressional relations.

We would like to appear before you in support of your proposals, but unfortunately in this case we must record our opposition to the bill that is under consideration. In our opinion, the use of heavy taxation is not considered to be an efficient or equitable means of addressing and solving air quality problems.

With your permission, let met just offer some specific observations on the bill.

First, it represents a highly regressive form of taxation. This approach fails to recognize that provision of electric service includes large numbers of customers with fixed incomes or low incomes and represents a product that is a basic necessity.

As you have heard, the rise in utility rates will not be uniform under this bill. For example, Potomac Electric Power Co., the company serving this building, would experience increases of 15 and 18 percent for residential and commercial users.

In the case of western Maryland, an area already designated by our State as economically depressed, rates would rise by 28 percent. Increases of this magnitude violate a traditional regulatory principle of gradualism, that we ought to undertake the design of rates to avoid large increases that would be unnecessarily severe.

You have head earlier comments about the emission devices. Let me add this for your information.

Experiences with these monitoring devices, and this is a device that is going to calculate the tax liability, suggests the reliability and accuracy is highly suspect, producing fluctuations that may reach as much as 20-plus or minus percent.

Picture this high degree of accuracy and how it would complicate the task of a utility company and a commission of evaluating the cost and benefits of various emission reduction options.

For example, a company confronted with an annual hundred million dollar tax liability for one plant has a $20 million metering error introduced into any cost benefit analysis that the company might perform. It would make it extremely difficulty, I would suggest, to try to regulate that kind of error into an intelligent regulatory process. The bill does not address the authority of State commissions to review the reasonableness of these taxes paid by utilities.

Obviously most utilities will seek to minimize this cost by comparing the tax liability with the cost of pollution control techniques.

The use of this type of taxing mechanism places utilities companies and their ratepayers in the unhappy position of paying the tax and the cost of cleanup simultaneously. Additionally, I would point out the inherent unfairness of this approach that would require ratepayers to pay emission taxes for recently completed construction plants, as well as those now under construction, particularly where they were designed and constructed in accordance with Federal new source performance standards.

In that regard, I should indicate to you the regulatory treatment of taxes would generally be considered as a cost of service and be flowed in as an operating expense.

However, this bill would leave an option open to regulatory commissions that might include evaluation of whether the taxes paid by a company were excess.

Obviously, if a commission found they were excess, they could be disallowed for rate making purposes. That would be a view that I would not support.

We would respectfully request that you resist the temptation to engage in quick-fix solutions which would impose enormous economic penalties on ratepayers.

Support of this has been noted earlier, but I think it is worth repeating that the emissions of sulfur dioxide have dropped 28 percent since 1973, while the industry's consumption of coal has increased 70 to 80 percent during the same period.

In this regard, the bill does not appear to consider the past and current efforts by States in undertaking significant investments to limit emissions. As an example, our own State of Maryland. The four major utilities providing electric service in our State have incurred facility costs and expenses in the amount of $2.2 billion between 1975 and 1986 for air pollution related environmental protection.

We recognize the concern of acid rain issues. We recognize also there is a growing body of scientific knowledge which questions the validity of earlier predictions of environmental harm. Later this year the Federal research program will issue its first comprehensive assessment of the scientific studies.

We believe that this assessment would be of vital interest as you consider implementing new policy. I mentioned earlier the need to avoid quick fix solutions. In the short run and based on current technology, the utility response will likely be the installation of scrubbers or substitution of low sulfur coal.

This approach will be expensive and lead to an uneconomic decision making process, one that might include the premature abandonment of facilities that would otherwise have longer useful lives.

This approach will likely result in a considerable loss of mining jobs and produce very large increases in the cost of electricity. It can be expected that such a direction would lead to a further weakening of American industry and worse even an already existing trade imbalance.

Let me express our appreciation for the opportunity of appearing before you today and we offer our continued assistance as you debate this very difficult issue.

Thank you very much.

[The statement of Mr. Badger follows:]

HOUSE COMMITTEE ON WAYS AND MEANS
September 9, 1987
TESTIMONY OF WILLIAM A. BADGER on H. R. 2497

Mr. Chairman and members of the Committee:

I am William A. Badger, a Commissioner on the Maryland Public Service Commission and Vice-Chair of the Committee on Electricity of the National Association of Regulatory Utility Commissioners, commonly referred to as the NARUC, on whose behalf I appear today. Accompanying me today is John Flumerfelt, the NARUC Director of Congressional Relations.

The NARUC is a quasi-governmental, non-profit organization founded in 1889. Within our membership are the governmental agencies of the fifty states, The District of Columbia, Puerto Rico and the Virgin Islands engaged in the regulation of utilities and carriers. Our chief objective is to serve the public interest by seeking to improve the quality of regulation in America.

We deeply appreciate this opportunity to express our views on H.R. 2497, a legislative proposal that would impose an excise tax on the amount of sulfur dioxide and nitrogen oxides that are discharged into the atmosphere by large steam generating boilers and furnaces. As you know, State public service commissions, (PSCs),have general responsibility for discharging a regulatory process that determines rates charged by electric utilities. We are therefore uniquely situated to offer some insight into the manner in which the emissions tax will operate and be treated for rate-making purposes.

Our participation in this debate is to ensure that, to the greatest extent possible, any solution mandated by Congress permits electric utilities to meet emissions standards in the most economic and efficient manner possible, and that States be given sufficient flexibility to apply regulatory principles which constitute the most practicable means of implementing such standards. We further urge that any legislation be based upon scientific evidence indicating that the proposed solution will alleviate the problem, and that the relative costs are warranted.

As you are aware, our diverse membership precludes NARUC from arriving at a consensus position on such a controversial and divisive issue such as acid rain. We can, however, offer some general principles which, in our view, should be integral to any acid rain solution. The time table for implementation of any additional source performance standards should take into account the need to develop innovative technologies and demonstrate them on a commercial scale. The NARUC strongly supports an aggressive Federal research and development program for clean coal and other innovative low-emission technologies, and Federal cost-sharing for the construction and operation of demonstration projects should be considered as part of this effort.

NARUC would prefer to come before you in support of your proposals, or at least with substantive ideas on how to improve upon them. However, in this case we must register our strong opposition to the bill that is under consideration. The use of heavy taxation is not considered to be an efficient or equitable means of addressing and solving air quality problems. The implementation of such an emissions tax offers the prospect of (1) serious adverse economic effects on utility companies accompanied by significant increases in the cost of electric service, (2) discouraging the development of clean coal technologies, and (3) further weakening the competitiveness of American industry.

There are several problems we perceive with the excise tax approach, and with the way it is proposed in H.R. 2497:

(1) It is a highly regressive form of taxation. This approach fails to recognize that electric service includes large numbers of customers with low or fixed incomes and represents a product that is a necessity of life. In this regard, it is important to note that electric rates will not rise uniformly under the bill. For example, Potomac Electric Power Company, which provides service to Maryland and Washington, D. C. would be required to increase rates for residential service in Maryland by 15 percent while commercial customers would experience an 18% increase in the cost of electricity. In the case of Western Maryland, an economically depressed area and one which has been targeted by our Governor for economic development incentives, rates for electric service would increase by approximately twenty-eight percent. The legislative proposal would have a devastating social impact on those least able to pay; a concept that Congress has rejected in most other tax laws. Incidentally, this twenty-eight percent increase would be consistent with findings recently announced by the Edison Electric Institute (EEI). According to the EEI study, two-thirds of the proposed tax on a national level would come from nine states, principally located in the midwest; with ratepayers observing an average twenty-seven percent increase in the cost of electricity.

(2) The proposed legislation does not establish mandatory emissions standards for sulfur dioxide and nitrogen oxide emissions, nor does it require the adoption of specific measures to reduce these emissions. The bill would operate to tax each unit of the identified emissions and thus automatically provide an incentive to find ways of reducing emissions (and thereby avoid the tax) that are less expensive than paying the tax. In principle, an economically appropriate emissions tax would be one that reflects the economic damages caused by the pollutant being taxed. However, in the case of sulfur dioxide and nitrogen oxides, not enough is currently known about the magnitude of the environmental and economic damage, if any, caused by these emissions in order to establish an appropriate tax. The result of the emission taxes contained in this legislation could be to induce far too little or far too much of a reduction in the emissions of these substances. NARUC would respectfully suggest that such an approach appears to subordinate the identification of air quality problems and appropriate solutions in favor of reducing the federal deficit.

(3) Under the provisions of this bill, the tax liability for sulfur dioxide and nitrogen oxides emissions would be determined by the use of continuous emissions monitoring devices. One of the reasons that this type of tax mechanism has not been widely used in dealing with pollution problems is partly attributable to the cost and difficulty of metering the emissions in order to calculate the tax owed. Experience with such monitoring devices indicates they are unreliable and inaccurate, producing fluctuations that may approach plus or minus twenty percent. Such a high degree of inaccuracy would greatly complicate the task of evaluating the cost and benefits of various emission reduction options. For example, at a generating station where the annual emission tax liability would be $100.0 million, a potential $20.0 million metering error is introduced into any cost-benefit analysis that the operating utility might perform. In this connection, a utility company in Maryland indicates that the installation of these devices would require an initial capital requirement of $10.0 million and annual maintenance expense of $500 thousand would be incurred. In recognition of the problems associated with the use of these types of monitoring devices, other types of alternative methods should be permitted.

(4) The bill does not address the authority of State Regulatory Commissions to review the reasonableness of any emissions taxes paid by a regulated utility. Obviously, most regulated utilities will seek to minimize their cost by comparing their emission tax liability with the cost of pollution control techniques. While regulators consider tax payments as a cost of providing service, the uniqueness of this type of tax could lead regulators to disallow recovery of what might be determined as "excess" emission tax expense. The use of such a taxing mechanism places utility companies and their rate-payers in the unhappy position of paying the tax and the cost of cleanup simultaneously. The unreasonableness of this type of taxing mechanism is illustrated by a result that would require ratepayers to pay emission taxes for recently completed plants as well as those now under construction, even though they would be burning low sulfur coal in accordance with Federal New Source Performance Standards.

(5) According to reports provided by the U.S. Environmental Protection Agency, emissions of sulfur dioxide have dropped 28 percent since 1973 while industry's consumption of coal has increased 80 percent during the same period. These significant reductions in sulfur dioxide emissions suggest that the Clean Air Act is working. Regarding the acid rain issues, there is a growing body of scientific knowledge which suggest that many of the earlier predictions of environmental harm were not valid. Later this year, the Federal Research Program will issue its first comprehensive assessment of the many scientific studies on the causes and effect of acid rain. In this regard, it would seem appropriate that this assessment should be of vital interest as you consider implementing new policy.

(6) Congress,in our opinion, should resist the temptation to engage in "quick-fix" solutions which would impose enormous economic penalties on the ratepayers. In the short run, and based on current technology, the response to emission reductions would probably involve the installation of expensive scrubbers or substitution of low-sulfur coal for high-sulfur coal. This approach to pollution abatement would, in either case, require substantial investment. Such an approach would lead to an uneconomic decision-making process, including the premature abandonment of facilities that would otherwise have longer useful lives. In addition to the dramatic rate effects resulting from the enactment of this bill, it can be expected that the tax will result in serious loss of employment to the mining industry. The combination of these events, we would respectfully suggest, will serve to weaken the competitiveness of American industry and worsen the trade inbalance situation.

(7) The bill does not consider the past and current efforts by states in undertaking significant investments to limit sulfur dioxide emissions. The magnitude of this effort undertaken by the states is illustrated by the experience of Maryland. For the period 1975-1986, the four Maryland Electric Utilities have incurred facilities costs and expenses in the amount of $2.2 billion for air pollution related environmental protection.

In summary, any emission legislation should be structured to provide for a portfolio approach based on scientific research, emerging technologies, and an integrated strategy which allows utilities and local jurisdictions enough flexibility to implement the most effective, situation-specific approaches. Emissions policies should be determined based on the size, age, type and location of each particular generating station, in addition to local economies and access to resources. This type of flexibility would enable state commissions to follow a well established regulatory principle of gradualism; that is, the design of rates which are not only fair and equitable but, at the same time avoid large increases that would be unnecessarily severe.

In closing, let me express our appreciation for this opportunity to testify before the Committee. We pledge our continued assistance as you proceed with this difficult debate.

Attached hereto is a Resolution on Acid Rain adopted by the NARUC Executive Committee at its 1987 Winter Meeting, and a Resolution on Clean Coal Technology adopted this past July.

Executive Committee Resolution No. 1

Resolution on Clean Coal Technology

WHEREAS, The members of the National Association of Regulatory Utility Commissioners (NARUC) are responsible for assuring ratepayers of reliable service a reasonable cost; and

WHEREAS, Coal is a vital natural resource whose efficient and environmentally sound utilization is in the national interest; and

WHEREAS, The NARUC is strongly committed to being a partner in the solution of air quality problems; and

WHEREAS, The NARUC is desirous of enhancing utility productivity while minimizing adverse environmental impact; and

WHEREAS, Emergent clean coal technologies hold the promise of substantial benefits in the productivity of coal-fired generating plants while reducing both SO2 and NOx emissions; and

WHEREAS, The NARUC endorses the appropriation of substantial Federal dollars toward the development and commercial application of clean coal technology (See Resolution on Acid Rain adopted February 25, 1987); and

WHEREAS, The NARUC opposes any effort to preempt or bypass State regulation; now, therefore, be it

RESOLVED, That the Executive Committee of the National Association of Regulatory Utility Commissioners (NARUC), assembled at its Summer Committee Meetings in San Francisco, California, supports the commitment of substantial Federal dollars to the advancement of clean coal technology, such as would be provided under S. 879; and be it further

RESOLVED, That the NARUC urges the Congress to reject regulatory provisions which restrict the flexibility of State regulatory commissions and the Federal Energy Regulatory Commission (FERC) to apply the variety of regulatory tools currently available to encourage clean coal technologies; and be it further

RESOLVED, That the NARUC opposes specific restrictive regulatory provisions, such as are set out in S. 879, that require the FERC to provide for accelerated recovery of clean coal cost, create a rebuttable presumption of prudence in clean coal expenditures, and require an incentive rate of return; and be it further

RESOLVED, That any exemptions to the Public Utilities Holding Company Act and Federal Power Act be more narrowly crafted to accomplish only the specific purpose of promoting clean coal technology; and be it further

RESOLVED, That the Executive Committee of the NARUC supports the promotion of clean coal technology in all appropriate ways, which may, among other matters, include at each State's discretion, prior approval of individual projects, sunsetting of regulatory incentives, and such other provisions as a State regulatory body deems appropriate; and be it further

RESOLVED, That any increase in Federal funding of clean coal technologies should not be accomplished at the expense of funding for energy conservation programs.

Sponsored by the Committee on Electricity
Adopted July 22, 1987

Resolution on Acid Rain

WHEREAS, Congress has been considering legislation which is intended to moderate the environmental impact of "acid rain" by requiring increased control of emissions of sulfur dioxide and oxides of nitrogen; and

WHEREAS, The adoption of such legislative proposals in all probability would cause many electric utilities to incur substantial additional costs in order to comply with these new emissions standards; and

WHEREAS, Such additional costs would ultimately be borne by utility ratepayers; and

WHEREAS, Previous legislative proposals to establish a mechanism for funding the additional costs which will be incurred by certain electric utilities to comply with any new emissions standards have improperly encroached upon the authority of State commissions to set retail electric rates; now, therefore, be it

RESOLVED, That the Executive Committee of the National Association of Regulatory Utility Commissioners (NARUC), assembled in it Winter Committee Meeting in Washington, D.C., urges Congress to appropriate sufficient funds for the scientific research and commercial development of the technologies which are necessary to determine and implement the most cost effective means of reducing acid deposition; and be it further

RESOLVED, That legislative proposals should give adequate consideration to the need to develop an implementation strategy which will permit electric utilities to meet any new emissions standards in the most economic and efficient manner; and be it further

RESOLVED, That Congress leave the States sufficient flexibility to apply regulatory principles which constitute the most efficient and least cost means of implementing changes in existing air emissions standards; and be it further

RESOLVED, That the Executive Committee supports the principle that any acid rain legislation be based upon findings supported by scientific evidence; and be it further

RESOLVED, That Congress take into account the economic impact on electric utilities and their customers and give proper recognition to the role of State commissions in setting retail electric rates.

Sponsored by the Committee on Electricity
Adopted February 25, 1987
Reported NARUC Bulletin No. 10-1987, page 8

Mr. Anthony [presiding]. Thank you for your testimony.

I have just a general question to both witnesses. Is it your testimony that you would be opposed to any tax or are you opposed to the thrust of this particular tax in that this tax would be too great a burden or would you be opposed to the concept of applying a tax on the polluter?

Is it the principle that you are also opposed to or is it just the thrust of this particular legislation, Mr. Mead, on you because of its impact in Illinois and on you, Mr. Badger, because of its impact in Maryland.

Mr. Mead. I cannot speak for Governor Thompson on the question of an excise tax on pollution. I think in theory were such a tax balanced to maximize our ability to maintain our coal markets and at the same time result in appropriate levels of SO_2 and NO_x control, that it would be a pallatable alternative to some of the other acid rain control bills that are now before Congress.

Again, I emphasize that this is an issue of really new impression to us.

Mr. Badger. NARUC would oppose this legislation in its current form. The problem that we have is that this type of solution is going to impose huge amounts of capital, perhaps unnecessarily, and we would have great concern about having plants in place for which ratepayers are being required to support both the fixed costs and operating expenses and to suddenly have them in a posture of being considered for possible abandonment or retrofit where the economics of that decision would suggest that the utility company might be better off paying tax.

We don't think this process services regulation well. There is a lot going on as far as the development of clean coal technologies and we ought to know more about the problem and have some commercial application of these.

It would seem that first we ought to set some standards and then have a time line in which utility companies and commissions throughout the country could respond to the standards.

The situation in our opinion appears to be reversed, you are taxed first so you are in the unhappy position of paying the tax as well as the cost of cleanup simultaneously.

They ought to have the ability to rely on previous standards, standards designed to take into account construction of facilities and for that reason we would not support the tax as structured.

Mr. Anthony. We probably could amend the legislation to grandfather those in, have it apply to new plants, people just coming into the process. Would it make it more pallatable if amendments like that were offered?

Mr. Badger. In our own State, Maryland has a number of acid rain studies that are going on. The difficulty is trying to predict accurately what the harm and damages are that result to society from acid rain, and until there is some assessment made on it, and obviously the feature of this tax is that it has tended to compensate or represent damages for some harm, but until we identify the extent of that harm, it places I think States and utility companies in a very difficult position, spending massive amounts of money not knowing whether that kind of pursuit, that direction, will correct the problem.

Mr. ANTHONY. Do other members of the committee seek recognition?

Mr. Duncan.

Mr. DUNCAN. I have no particular question other than to compliment the two witnesses. I am sorry more of our colleagues are not here to hear your testimony. I think it is highly important.

Mr. ANTHONY. Mr. Gregg.

Mr. GREGG. Did I hear you say, underneath the core of operation, that if we are going to address the acid rain, acid aerosol, particulate sulfate problem in any way, you would as a philosophical position rather see it done through economic incentive than through regulatory action?

Mr. MEAD. I think such a solution offers the opportunity to develop as an industrialized nation and to really increase competitiveness both from a standpoint of cost of electricity here and from the standpoint of new frontiers of technology worldwide.

Mr. GREGG. It gives more flexibility basically——

Mr. MEAD. That is correct, just from a very parochial standpoint, in Illinois it is the solution that maintains what I think is a very important industry to the country, and that is a domestic energy resource.

Mr. GREGG. I was a little confused, Mr. Badger, on your testimony. I hear you saying that this is going to generate huge capital costs and then I hear you saying that coal switching isn't going to generate huge capital costs. Is it?

Mr. BADGER. No, sir. Coal switching would not. It would lead in my opinion to the loss of considerable mining jobs.

Mr. GREGG. Well, somebody is going to mine the coal. We are not going to buy foreign coal, we are going to buy low sulfur coal in the west?

Mr. BADGER. It is going to be a dislocation.

Mr. GREGG. Dislocation is better than loss?

Mr. BADGER. The capital investment would be associated with technologies now available, principally scrubbers. Those costs have been estimated to be as high as $100 million to undertake those.

I guess my concern is that industry and the Federal Government ought to have a partnership as they proceed down this line of developing clean coal technologies.

Keep in mind, the States are funding this, encouraging this, some States are allowing this to be expensed but there is a caution here that we ought to be aware of the investments that we put in this because they will be supported by ratepayers, they will require borrowing and it has the potential of having Wall Street, as they have in the Tax Reform Act, take new looks at the bond ratings of companies.

We have just gone through a period in Maryland which I find somewhat ironic that by implementing the Tax Reform Act of 1986, we have had Wall Street lower bond rates. I find that a curious result when we actually had expenses of the company reduced.

We ought to be aware of the scrutiny that utilities go under and how jealous they are of preserving an excellent financial rating with the business community.

Mr. GREGG. Does Maryland produce coal?

Mr. BADGER. Yes, sir, in western Maryland.

Mr. Gregg. Does it have a vested interest in whether it is low sulfur or high sulfur coal?

Mr. Badger. Yes. Some of the coal mined in western Maryland is used by Potomac Electric Power Co.

Mr. Gregg. What percentage of their coal is high sulfur coal?

Mr. Badger. Very insignificant.

Mr. Gregg. If you are looking at the ratepayer's situation in Maryland and you are talking about whether or not somebody puts on a scrubber, which is a major capital investment, and the laws basically encourage a company to proceed down the route of clean coal technology, which, again, will be a major capital investment, or you give the consumer the option of having the company switch to low sulfur coal, isn't it inevitably going to be in the ratepayers benefit to go to low sulfur coal because the capital investment will be significantly less and as a practical matter there is no long-term useful life to low sulfur coal?

Mr. Badger. I agree. I would say we engage in a seven month process to determine just and reasonable rates for utilities. Our statute requires that we also consider the economy of the State.

How that would be applied would be through an evidentiary process in which that would be an issue, that the protection of having coal dislocation of these kind of resources is going to produce *x* jobs that will no longer be available.

Mr. Gregg. I think the bottom line of my point is that I question all this argument for clean coal technology. Since I have come to Congress we have had a whole series of these what I would call delaying technologies.

We started with the scrubber and that became expensive, so people talked about fluidized boilers. Every technology tends to push the issue of solving the problem out 10 or 12 years. But as a practical matter, if you are saying that the ratepayer is going to benefit more from having clean coal technology brought on line and that this bill is going to negatively impact bringing that on line, I can't accept that if coal switching is an option that is available because as a practical matter the average electric ratepayer is going to benefit from coal switching.

I admit there are sections that aren't going to benefit from it, but they are going to benefit from coal switching rather than clean coal technology, because that is going to get passed through to them.

Mr. Badger. I agree. I was trying to suggest that this bill would require the ratepayer to pay the tax as well as the cleanup at the same time. If we are going to pursue the direction of clean coal technologies, that has a cost to it that ought to be supported by the ratepayers as well. I am afraid that any premature movement toward things such as scrubbers, for example, when maybe we are only near a solution in clean coal technologies, just compound the investment and perhaps makes bad economic decisions for the utility companies and its ratepayers.

Mr. Gregg. Of course, the taxpayers is now paying for the clean coal technology, because that is where all the money is coming from, not from basic technology research. I appreciate your testimony today. Thank you for taking time to come.

Mr. Anthony. And thank you very much.

The next panel is the National Wildlife Federation, represented by David C. Campbell, a resource economist; Sierra Club, represented by David Gardner, legislative director; Environmental Action, represented by Dan Becker, legislative counsel; and the National Clean Air Coalition, represented by Richard Ayres, chairman.

Is there a representative of the Sierra Club in the committee hearing room?

Mr. Campbell, you may proceed and then we will have Mr. Becker and then Mr. Ayres.

You can start your testimony when Mr. Campbell finishes his.

Welcome to the committee.

STATEMENT OF DAVID C. CAMPBELL, PH.D., RESOURCES ECONOMIST, NATIONAL WILDLIFE FEDERATION

Mr. David C. Campbell. Mr. Chairman and members of the committee, the National Wildlife Federation is the Nation's largest conservation organization with over 4.8 million members and supporters and 51 affiliated State organizations.

I represent the federation today to urge you to report favorably on H.R. 2497, the Sulfur and Nitrogen Emissions Tax Act of 1987. The imposition of fees on sulfur dioxide and nitrogen oxide emissions will decrease the adverse effects from acid rain to fish and wildlife habitat and human health.

The fees are preferable to increases in personal or corporate income taxes as a means of reducing the Federal deficit because they have the added social benefit of reducing acid rain and of reducing the external negative effects on some of our production processes as was described earlier by Mr. Campbell from the EPA.

Dr. Paul Portnoy at Resources for the Future has called this a sin tax similar to fees on nicotine and alcohol.

The threats to our natural resource from acid rain are well documented by more than 3,000 studies. This research has found significant damage to forests, buildings, and soils as well as to lakes and waterways.

There is a growing body of medical and scientific evidence that public health is threatened from sulfur and nitrogen oxides in the air. The president of the American Lung Association, Dr. Thomas Godar, testified in the Senate that pollutants causing acid rain pose health risks for people over 65, those with asthma, chronic bronchitis and emphysema, and people with a history of heart disease.

Nitrogen oxides are also a prime component of ozone which is breathed, felt, and squinted through by more than 100 million Americans.

The adverse effects caused by acid rain are great under existing emissions and these emissions are going to increase unless additional measures are taken to reduce them.

Sulfur dioxide emissions are expected to grow by more than 20 percent, from 25 to 30 million tons, between 1985 and the year 2000.

The economic incentive incorporated in the bill is an appropriate approach to reducing acid rain because the decisions that govern environmental quality often originate in the economic realm.

Economic incentives impel utilities to concentrate electric generation in low-cost, coal-fired plants with inadequate emission controls, even though they produce much more sulfur dioxide than other types of electric plants.

Economists have long argued for the imposition of pollution taxes as a cost-effective incentive for firms to reduce harmful emissions.

These proposed emission fees will allocate discharges among sources: Firms and utilities will eliminate discharges where the costs of doing so are low and reducing or continuing discharges where the cost of controlling emissions is high. Where the demand for electricity is less than the capacity of a regional power system, plants with high SO_2/Btu emission ratios will likely be the first to be idled.

Firms will select the best technology for emissions reduction suitable for their plants.

Moreover, the imposition of emission fees will encourage research into pollution reduction technology and thus lower the costs of pollution control and obtain further reductions in acid precipitation.

A study by the Electric Power Research Institute estimated that it would cost about $13 million to reduce nitrogen oxide emissions.

I believe that another witness following us today, W.R. Grace Corp., will describe a process where these costs are reduced to 3 million, a reduction of over 75 percent, through innovative research and technology.

We don't think the imposition of emission fees should require the additional gathering of information. The information required to set and assess fees to obtain a desired level or a desired reduction in emissions is precisely that required to regulate discharges or to carry out any other effective acid rain control policy.

The National Wildlife Federation supports the "polluter pays" concept embodied in this bill and seeks its early approval and passage. The time has come to quit procrastinating about acid rain.

Emission fees can be levied quickly to provide immediate impetus to the installation of pollution control technology. This bill will be an important tool in a program to clean up American's air and water.

[The statement of Mr. David C. Campbell follows:]

Working for the Nature of Tomorrow.
NATIONAL WILDLIFE FEDERATION
1412 Sixteenth Street, N.W., Washington, D.C. 20036-2266 (202) 797-6800

TESTIMONY OF DR. DAVID C. CAMPBELL
Resources Economist
before the

COMMITTEE ON WAYS AND MEANS
U.S. HOUSE OF REPRESENTATIVES

HEARING ON H.R. 2497
THE "SULFUR AND NITROGEN EMISSIONS TAX ACT OF 1987"

September 9, 1987

The National Wildlife Federation is the nation's largest conservation organization with over 4.8 million members and supporters and 51 affiliated state organizations. We urge the Committee to report favorably on H.R. 2497, the Sulfur and Nitrogen Emissions Tax Act of 1987. The imposition of fees on sulfur dioxide and nitrogen oxide emissions will decrease the adverse effects from acid rain to fish and wildlife habitat and human health.

H.R. 2497 would levy a pollution excise tax on the two major sources of acid precipitation: sulfur dioxide (SO_2) and nitrogen oxide (NO_x) emissions. The proposed emissions tax would be progressive; those large steam boilers and furnaces producing the greatest amounts of emissions per million British thermal units (Btu) would pay the greatest amount of tax, $.45 per pound for SO_2 emissions. The tax would be phased in for three years, beginning in 1989.

Revenues from the tax would be deposited in a sulfur and nitrogen emissions (SANE) trust fund to subsidize measures to reduce taxable emissions.

The Joint Committee on Taxation estimates that the sulfur and nitrogen emissions tax would raise $6.4 billion in 1989. We estimate that the gross revenues from the tax will be even larger in subsequent years.

As a method of raising Federal revenues, the SO_2 and NO_x emission fees are preferable to increases in personal and corporate income taxes because they have the added social benefit of reducing acid rain. The threats to our natural resources from acid rain are well-documented by more than 3,000 studies. This research has found significant damage to forests, buildings, and soils, as well as to lakes and waterways.

There is also a large body of medical and scientific evidence on public health threats from sulfur and nitrogen oxides in the air. The president of the American Lung Association, Dr. Thomas Godar, testified in the Senate that pollutants causing acid rain pose health risks for people over 65, those with asthma, chronic bronchitis and emphysema, and people with a history of heart disease. Researchers also suspect that acidic water may be linked to increased levels of lead in drinking water by releasing the lead solder used in water pipes.

The Congressional Office of Technology Assessment (OTA) determined that airborne sulfate pollution -- a derivative of sulfur dioxide -- causes approximately 50,000 premature deaths each year. Researchers in Canada now have clearly documented increased hospital visits during periods of elevated sulfur dioxide pollution.

Nitrogen oxides are also a prime component of ozone (smog) which is breathed, felt, and squinted through by more than 100 million urban Americans.

The adverse effects caused by acid rain will increase unless additional measures are taken to reduce emissions. Sulfur dioxide emissions are expected to grow by more than 20%, from 25 to 30 million tons, between 1985 and 2000. Experts forecast that nitrogen oxide emissions will increase from 18 to 21 million tons between 1985 and 2000.

The economic incentive incorporated in the bill is an appropriate approach to reducing acid rain because the decisions that govern environmental quality often originate in the economic realm. Economic incentives impel utilities to concentrate electric generation in low-cost, coal-fired plants with inadequate emission controls, even though they produce much more sulfur dioxide than other types of electric plants.

Economists have long argued for the imposition of pollution taxes as a cost-effective incentive for firms to reduce harmful emissions.

Prices established through private exchanges are the usual way our market economy limits the use of resources and leads them into their highest productive use. Since most common property resources, such as air and water, are, by definition, not private property, the price system does not account for their value, and they are overused, misused, and degraded. Firms do not consider the costs of unwanted and unintended byproducts when they decide what and how to produce their products. Effluent charges are one way to include the costs of pollution in the price system.

The Congressional Budget Office estimates that excise taxes on sulfur dioxide and nitrogen oxide emissions would encourage operators of fossil fuel-fired utilities and industrial boilers to reduce emissions by six to ten million tons per year, approximately one-third of current nationwide emissions. Firms will find it less costly to reduce a portion of their emissions than to pay the tax.

The proposed emission fees will allocate discharges among sources, eliminating discharges where the costs of doing so are low and reducing or continuing discharges where the costs of controlling emissions is high. When the demand for electricity is less than the capacity of a regional power system, plants with high SO_2/Btu emission ratios likely will be the first to be idled.

Firms will select the best technology for emissions reduction suitable for their plants. Moreover, the imposition of emission fees will encourge research into pollution reduction technology and thus lower the costs of pollution control and obtain further reductions in acid precipitation.

The imposition of emission fees should not require the gathering of additional information. The information required to set and assess fees to obtain a desired reduction in emissions is precisely that required to regulate discharges or to carry out any other effective acid rain-control policy.

The National Wildlife Federation supports the "polluter pays" concept embodied in this bill and seeks its early approval and passage. The time has come to quit procrastinating about acid rain. Emission fees can be levied quickly to provide immediate impetus to the installation of pollution control technology. This bill will be an important tool in a program to clean up America's air and water.

STATEMENT OF DANIEL BECKER, LEGISLATIVE COUNSEL, ENVIRONMENTAL ACTION

Mr. **Becker**. Thank you, Mr. Chairman. With your permission, I would like to summarize my testimony rather than read the entire document.

Mr. Chairman, members of the committee, I would like to thank you for the opportunity to testify here today.

My name is Daniel Becker and I am legislative counsel for Environmental Action. Environmental Action is a national environmental advocacy organization based in Washington.

On behalf of our nationwide membership, I thank the committee for this opportunity to testify and particularly for addressing this important issue of acid rain pollution.

Environmental Action strongly supports H.R. 2497, the Gregg-Downey bill to tax sulfur dioxide and nitrogen oxide emissions. While it is not a comprehensive acid rain cleanup program, passage of the bill will constitute an important step toward the control of key pollutants assaulting our environment and health.

Sulfur dioxide and nitrogen oxides are the precursor pollutants causing acid precipitation or acid rain.

Numerous scientific studies have shown that acid rain damages or destroys our natural resources, crops, buildings and monuments. But perhaps its most insidious effect is the damage acid rain and its precursors cause to human health.

The harm comes in two ways. Breathing sulfur dioxide and nitrogen oxide emissions causes and aggravates lung disease, and second, when acid rain falls, it acidifies reservoirs. The acidified water leaches toxic metals such as lead, aluminum, and copper from reservoir beds and pipes into drinking water.

Nitrogen oxides are also precursors of ozone smog which is toxic to human lungs. It is prevalent in high concentrations along America's Southwest, gulf, and east coasts, in the northern Midwest and other urban areas. Over 100 million Americans breath air containing unhealthy levels of ozone smog.

If we do not take action to reduce these emissions, we will be forced to budget large sums to pay for increased health costs and to compensate for lost productivity.

H.R. 2497 would tax emissions of sulfur dioxide and nitrogen oxides, providing two important benefits to the American people: billions of dollars in much-needed revenues and a strong economic incentive for polluting industries to reduce their sulfur dioxide and nitrogen oxide emissions.

Companies whose power plants and industrial boilers emit sulfur dioxide and nitrogen oxides are now receiving an unfair subsidy at the expense of the American people. This multi-billion-dollar subsidy consists of the economic, health and environmental costs of their pollution, borne not by the polluters, but by American taxpayers. Therefore, these companies neither pay the cost of reducing pollution nor the cost of the environmental and health damage it causes.

The Gregg-Downey bill would begin to shift the costs of sulfur dioxide and nitrogen oxide pollution from the American people to those who are creating the problem. This polluter pays principle makes the cost of production reflect the cost to society of the pollution. Economists call this internalizing the externalities.

The American people now pay the entire cost of sulfur dioxide and nitrogen oxide pollution. We pay with our dollars and with our health.

Several studies show the frightening proportions of the health problems created by these pollutants.

The Office of Technology Assessment has reported that sulfate pollution is a major factor causing approximately 50,000 premature deaths in the United States every year.

The American Lung Association testified that sulfur dioxide exposure is the third leading cause of lung disease, after active and passive cigarette smoking.

A recent Harvard University study estimates that the combined effects of sulfate and particulate pollution cause as much as 5 percent of all deaths in the average polluted urban area.

The damage to our health, resources and buildings have a budget impact.

Increased health care and lost productivity costs due to air pollution run as high as $40 billion annually, according to the American Lung Association. The costs attributable to sulfur dioxide, alone, are at least $16 billion. These figures include higher health insurance premiums and higher budget outlays due to increased Medicare and Medicaid costs.

The National Academy of Sciences estimates that resource damage from acid rain totals $7 billion and damage to buildings and statues totals $2 billion annually.

Most environmental legislation and regulation raise the economic costs of polluting. The more directly related the cost is to the activity, the more effective an incentive it provides. H.R. 2497 is entirely consistent with this approach. By placing a tax directly on the emitted pollutants, H.R. 2497 links the economic incentive to the pollution and internalizes the cost.

This excise tax would be likely to reduce sulfur dioxide emissions by an estimated 6 to 10 million tons, according to Congressional Budget Office and Office of Technology Assessment studies, provided utilities cannot simply pass through to ratepayers the costs of the tax.

The bill leaves to the polluter the choice of how to reduce emissions—including scrubbers, switching to low sulfur fuels or energy conservation. All of these would create new jobs.

A recent study by Environmental Action Foundation's Energy Conservation Coalition shows that utilities can cut their emissions substantially at low cost by implementing and encouraging their customers to use energy conservation.

New efficient industrial motors, lighting ballasts and bulbs and heating and cooling systems can reduce electrical demand by up to 25 percent.

Utility programs that encourage the use of these technologies will reduce sulfur dioxide and nitrogen oxide emissions. They will also save the company money by postponing the need to build costly new power plants and float bonds which raise construction funds.

I would like to take a moment to address briefly another bill with important benefits to the environment which this committee is considering.

Environmental Action strongly supports Representative Stark's bill, H.R. 2854, which would impose an excise tax on chloroflourocarbons—CFC's.

These chemicals, used in refrigerators and air conditioners, aerosol propellants and even fast food packaging, are destroying the stratospheric ozone layer which protects earth and its inhabitants from excessive solar ultraviolet rays. Researchers at the South Pole have found the smoking gun.

They have discovered unusually high CFC concentrations in a hole in the ozone layer the size of the United States. Scientists estimate that over the next 80 years, emissions of CFC's at current levels can cause 40 million additional cases of skin cancer, 800,000 deaths, and 12 million cataracts.

The Stark bill's tax rates would provide an economic incentive for producers of CFC's to accelerate development and production of safer alternatives.

This approach is in contrast to the proposal of members of the Reagan administration—sunglasses, lotion, and a hat.

We urge the committee to pass the Stark bill.

Environmental Action believes that the Ways and Means Committee is an appropriate forum for debate and action to stop acid rain and protect earth's ozone shield. We urge that the committee adopt these two key environmental and revenue bills.

[The statement of Mr. Becker follows:]

STATEMENT OF DANIEL BECKER

LEGISLATIVE COUNSEL FOR ENVIRONMENTAL ACTION

ON BEHALF OF ENVIRONMENTAL ACTION

Mr. Chairman and members of the Committee, my name is Daniel Becker, Legislative Counsel for Enivronmental Action. Environmental Action is a national environmental advocacy organization based in Washington.

On behalf of Environmental Action and our nationwide membership I want to thank the committee for this opportunity to testify today. I particularly want to thank and congratulate the Committee for addressing this important issue.

Environmental Action strongly supports H.R. 2497, the Gregg-Downey bill to tax sulfur dioxide and nitrogen oxide emissions. While it is not a comprehensive acid rain cleanup program, passage of the bill will constitute an important step toward the control of key pollutants assaulting our environment and health.

Sulfur dioxide and nitrogen oxides are the precursor pollutants causing acid precipitation or "acid rain."

Numerous scientific studies have shown that acid rain damages or destroys our natural resources, crops, buildings and monuments. But perhaps its most insidious effect is the damage acid rain and its precursors cause to human health.

The harm comes in two ways. Breathing sulfur dioxide and nitrogen oxide emissions causes and aggrevates lung disease, and second, when acid rain falls, it acidifies reservoirs. The acidified water leaches toxic metals such as lead, aluminum and copper from reservoir beds and pipes into drinking water.

Nitrogen oxides are also precursors of ozone smog which is toxic to human lungs. It is prevalent in high concentrations along America's southwest, gulf and east coasts, in the northern midwest and other urban areas. Over one hundred million Americans breath air containing unhealthy levels of ozone smog.

If we do not take action to reduce these emissions, we will be forced to budget large sums to pay for increased health costs and to compensate for lost productivity.

H.R. 2497 would tax emissions of sulfur dioxide and nitrogen oxides, providing two important benefits to the American people: billions of dollars in much needed revenues and a strong economic incentive for polluting industries to reduce their sulfur dioxide and nitrogen oxide emissions.

EFFECTS OF EXPOSURE TO SULFUR DIOXIDE AND NITROGEN OXIDES

Although emitted by many of the same sources, sulfur dioxide and nitrogen oxides fall into two different categories of pollutants. "Reducing type" air pollution is typically composed of sulfur dioxide and smoke associated with fog and cool temperatures. "Oxidizing type" air pollution is photochemical air pollution characterized by nitrogen oxides, photochemical oxidants and hydrocarbons. The reducing air pollution is caused by incomplete coal burning and is commonly thought of as "London fog". while the oxidizing pollution is the result of the reaction of sunlight with the products of fossil fuel combustion.

"REDUCING" AIR POLLUTION

The burning of fossil fuels generating sulfur dioxide nearly always produces particulate matter. The particles appear to act as mediators in the conversion of sulfur dioxide to sulfuric acid.

In laboratory animals, chronic exposure to low concentrations of sulfur dioxide causes a thickening of the mucous layer in the trachea and an excessive enlargement of goblet cells and mucous glands. This condition is similar to chronic bronchitis.

Inhalation of sulfur dioxide by humans for less than or about one hour causes bronchial constriction -- narrowing of air passageways -- which brings on increased flow resistance (difficulty breathing). Scientists have shown that a dose response relationship exists between exposure concentration and the degree of air flow resistance. Asthmatics are particularly sensitive to sulfur dioxide, even when exposure periods last less than one hour. Other groups showing high sensitivity to air pollution include infants and children, whose lungs are developing, people over 65 years old and pregnant women.

PHOTOCHEMICAL AIR POLLUTION

Photochemical air pollution is caused by the atmospheric reactions of nitrogen oxides, ozone and other chemicals. Even if these chemicals do not themselves reach high enough concentrations to cause toxic effects, their chemical reactions lead to the formation of photochemical smog.

Nitrogen dioxide, like ozone, is a deep lung irritant, which can cause pulmonary edema (excessive buildup of fluids). Exposure of nitrogen dioxide in varying concentrations to animals can also cause cell damage, lung tissue lesions, increased susceptibility to respiratory infection and, in certain cases, emphysema-like conditions. Experimental nitrogen dioxide exposure to humans and other animals can cause an increase in respiratory frequency, and alterations in the mechanical functioning of the lungs.

THE BILL WILL SHIFT COSTS FROM ALL TAXPAYERS TO POLLUTERS

Companies whose power plants and industrial boilers emit sulfur dioxide and nitrogen oxides are now receiving an unfair subsidy at the expense of the American people. This multi-billion dollar subsidy consists of the economic, health and environmental costs of their pollution, borne not by the polluters, but by American taxpayers. Therefore these companies neither pay the cost of reducing pollution nor the cost of environmental and health damage it causes.

The Gregg-Downey bill would begin to shift the costs of sulfur dioxide and nitrogen oxide pollution from the American people to those who are creating the problem. This "polluter pays" principle makes the cost of production reflect the cost to society of the pollution. Economists call this internalizing the externalities.

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THE HEALTH COSTS:

Several studies show the frightening proportions of the health problems created by these pollutants.

* The Office of Technology Assessment has reported that sulfate pollution is a major factor causing approximately 50,000 premature deaths in the United States every year.

* The American Lung Association testified that sulfur dioxide exposure is the third leading cause of lung disease, after active and passive cigarette smoking.

* A recent Harvard University study estimates that the combined effects of sulfate and particulate pollution cause as much as 5% of all deaths in the average polluted urban area.

THE ECONOMIC COSTS:

The damage to our health, resources and buildings have a budget impact.

- Increased health care and lost productivity costs due to air pollution run as high as $40 billion annually, according to the American Lung Association. The costs attributable to sulfur dioxide, alone, are at least $16 billion. These figures include higher health insurance premiums and higher budget outlays due to increased Medicare and Medicaid costs.

- The National Academy of Sciences estimates that resource damage from acid rain totals $7 billion and damage to buildings and monuments runs $2 billion annually. In Illinois alone, acid rain damage to buildings and statues totals $272 million.

THE TAX PROVIDES AN ECONOMIC INCENTIVE TO STOP POLLUTING

Most environmental legislation and regulation raise the economic costs of polluting. The more directly related the cost is to the activity, the more effective an incentive it provides. H.R. 2497 is entirely consistent with this approach. By placing a tax directly on the emitted pollutants, H.R. 2497 links the economic incentive to the pollution and internalizes the cost.

This exise tax would be likely to reduce sulfur dioxide emissions by an estimated six to ten million tons, according to Congressional Budget Office and Office of Technology Assessment studies, provided utilities cannot simply pass through to ratepayers the costs of the tax.

The bill leaves to the polluter the choice of how to reduce emissions -- including scrubbers, switching to low sulfur fuels or energy conservation. All of these would create new jobs.

A recent study by Environmental Action Foundation's Energy Conservation Coalition shows that utilities can cut their emissions substantially at low cost by implementing and encouraging their customers to use energy conservation. New efficient industrial motors, lighting ballasts and bulbs and heating and cooling systems can reduce electrical demand by up to 25%.

Utility programs that encourage the use of these technologies will reduce sulfur dioxide and nitrogen oxide emissions. They will also save the company money by postponing the need to build costly new power plants and float bonds which raise construction funds.

TAXING CHLOROFLOUROCARBONS

I would like to take a moment to address briefly another bill with important benefits to the environment which this committee is considering. Environmental Action strongly supports Representative Stark's bill, H.R. 2854, which would impose an exise tax on chloroflourocarbons (CFC's).

These chemicals, used in refrigerators and air conditioners, aerosol propellants and even fast food packaging, are destroying the stratospheric ozone layer which protects Earth and its inhabitants from excessive solar ultraviolet rays. Researchers at the South Pole have found the smoking gun.

They have discovered unusually high CFC concentrations in a hole in the ozone layer the size of the United States. Scientists estimate that over the next eighty years, emissions of CFC's at current levels can cause 40 million additional cases of skin cancer, 800,000 deaths and 12 million cataracts.

The Stark bill's tax rates would provide an economic incentive for producers of CFC's to accelerate development and production of safer alternatives. This approach is in contrast to the proposal of members of the Reagan Administration -- sunglasses, lotion and a hat. We urge the Committee to pass the Stark bill.

Environmental Action believes that the Ways and Means Committee is an appropriate forum for debate and action to stop Acid Rain and protect Earth's ozone shield. We urge that the Committee adopt these two key environmental and revenue bills.

I would be pleased to answer any questions you may have.

STATEMENT OF RICHARD E. AYRES, CHAIRMAN, NATIONAL CLEAN AIR COALITION, AND SENIOR ATTORNEY, NATURAL RESOURCES DEFENSE COUNCIL

Mr. Ayres. My name is Richard Ayres. I am senior attorney with the Natural Resources Defense Council. I am speaking today as the chairman of the National Clean Air Coalition, representing more than two dozen environmental, public health, labor and public interest organizations and millions of Americans concerned with clean air.

The coalition appreciates this opportunity to go on record in support of a national program to tax sulfur and nitrogen oxide emissions. These pollutants are causing grave damage to the human and natural environment. The Nation has an enormous financial and physical stake in their reduction. Given the apparent difficulty in addressing a reduction program in other forums, the Congress and the country would owe you a debt of gratitude if you enact H.R. 2497.

These pollutants are a major health and environmental concern in America today.

Mr. Chairman, a spokesman for the American Lung Association has called sulfur pollution the third leading cause of lung disease, after active and passive smoking.

In the atmosphere, these pollutants often transform into particle form, become major contributors to unhealthful levels of airborne particulate and to the destruction of air quality in our national parks and elsewhere.

The evidence is mounting that the Federal response to sulfur and nitrogen oxide control has been tardy and inadequate.

The proposal before you to tax sulfur and nitrogen dioxide emissions at up to 45 cents per pound is one way to improve the Federal response.

It is by no means the only way. The coalition has strongly supported acid rain legislation before the Energy and Commerce Committee, and we continue to support approaches such as that of H.R. 2666.

But studies by the Congressional Budget Office and others suggest the approach you are considering would accomplish the fundamental goal of any clean air program—it would reduce the pollutants of concern, and it would get results quickly.

Beyond that, it would give the polluters their choice of control measures based on their own economic, engineering, and geographic circumstances, a policy goal of many supporters of acid rain legislation.

I would like to comment on some of the other potential advantages of the emissions fee approach of H.R. 2497 and 2498.

First, the bills begin to produce emission reductions earlier than the regulatory legislation that has previously been proposed. Since many health and acid rain effects are the result of the cumulative pollution loadings over years, this is an important feature.

Second, emission fees have the potential to be highly cost-effective means of achieving emission reductions, if unencumbered with exemptions for particular categories of sources of pollution.

Mr. ANTHONY. Mr. Ayres, I am going to have to get over and vote. Inasmuch as no other member has shown up, we will have to put the committee in recess until either I return or another member returns.

Mr. AYRES. I appreciate the opportunity to be here. We will wait.

Mr. ANTHONY. The full committee will resume its hearing.

If you felt summer was over, I think that vote was the real designation that summer is over. It looks like we will be doing this now until Christmas Eve.

Mr. Ayres, we will let you pick up in the middle of your testimony, and then we will have some questions for the panel. Thank you for your patience and understanding.

Mr. AYRES. What I was saying is that emission fees could be a powerful incentive for the commercialization of cost effective clean coal technologies, even without the subsidies for new technologies that could be put into the program.

Today it is the American people who are bearing the cost of excessive sulfur and nitrogen dioxide pollution. The National Academy of Sciences estimates resource damage from acid rain amounts to $7 billion per year. The American Lung Association surveyed recent cost studies and concluded that the health consequences of air pollution cost perhaps $40 billion per year in health care and lost productivity. The American taxpayer bears a part of that directly through the cost of medicare and medicaid payments.

Your proposal would ask those whose pollution inflicts these costs on our people and our resources to pay a portion—not the total, but a portion—of the costs of that pollution in taxes to the Federal Government. If they choose, they may reduce their taxes by controlling their pollution.

Studies suggest that tax proposals similar to yours would yield a 10-million ton reduction in sulfur dioxide emissions and a substantial reduction in nitrogen oxides. And they suggest that the overall cost to the emitters would be comparable to "least-cost" emissions reduction programs considered elsewhere. In the short term, the Federal Treasury would recoup for the common good some of the expense that pollution imposes on society. In the long term, society would be served two ways—by the revenue from a permanent tax and by the benefits of substantial pollution reductions.

Let me conclude by touching briefly on four counter arguments you will hear.

Argument 1: A tax is an inappropriate response to the problem.

Response: In the first place, sulfur and nitrogen emissions taxes are a perfectly appropriate source of revenue. Emissions taxes are in use around the world. Any tax you approve should be permanent, and it should be made clear that State utility regulators should only allow a passthrough of that portion of the tax that could not be avoided by more cost-effective emission reductions. This would guarantee a stable source of revenue in the context of a responsible environmental plan.

In the second place, the Tax Code is always used to further the social, as well as economic, interests of the country. I am sure members of the committee would be hard pressed to name a single Tax Code provision that does not have an adequate justification as good social or economic policy.

Argument 2: The energy industry is complicated, and continuous emissions monitoring would be required. Thus, the tax would be hard to administer.

Response: The Congressional Budget Office pointed out in 1986 that the utility industry is a relatively homogenous one, developing formula estimates would be straightforward, and the administrative costs of the tax would be small relative to revenues collected. In addition, many plants already monitor their emissions on a continuous basis, and more will have to in the future.

Argument 3: The tax would put domestic manufacturers at a competitive disadvantage since energy costs would increase.

Response: This old saw is used against practically any tax proposal. Studies of energy use show energy represents a tiny fraction of the cost for virtually all manufacturing industries. Those few industries with a relatively high cost of energy would have a stake in encouraging emission reductions and pursuing programs that make sense for other programs.

Finally, Mr. Chairman, argument 4: Sulfur oxides emissions are headed down "naturally" as a result of the present Clean Air Act, so there is no need to enact new legislation.

Response: In March 1987, EPA prepared an estimate of national emission trends for sulfur and nitrogen oxides. This estimate indicates that without additional legislation, sulfur emissions will climb by 33 percent between now and 2010, while nitrogen oxides emissions will increase 58 percent. Coal industry claims of reductions are based on transitory circumstances that are already beginning to disappear.

Mr. Chairman, the National Clean Air Coalition believes the tax proposal before you delivers on the fundamental goal of clean air policy—pollution reductions on a fast track. We are pleased to support it. We believe it would become the basis for a more detailed and comprehensive sulfur and nitrogen dioxide reduction program. We believe the health of the American people and the needs of the human and natural environment demand prompt action.

Thank you very much, Mr. Chairman.

[Mr. Ayers subsequently submitted the following revised prepared statement:]

STATEMENT OF RICHARD E. AYRES
CHAIRMAN, NATIONAL CLEAN AIR COALITION
in support of
NATIONAL EMISSIONS TAX PROPOSALS
before the
HOUSE COMMITTEE ON WAYS AND MEANS
Washington, DC
Wednesday, September 9, 1987

Mr. Chairman and members of the committee, my name is Richard Ayres. I am senior attorney with the Natural Resources Defense Council. I am speaking today as the Chairman of the National Clean Air Coalition, representing more than two dozen environmental, public health, labor and public interest organizations and millions of Americans concerned with clean air.

The Coalition appreciates this opportunity to go on record in support of a national program to tax sulfur and nitrogen oxide emissions. These pollutants are causing grave damage to the human and natural environment. The nation has an enormous financial and physical stake in their reduction. Given the apparent difficulty in addressing a reduction program in other forums, the Congress and the country would owe you a debt of gratitude if you enact these provisions.

These pollutants are a major health and environmental concern in America today. Mr. Chairman, a spokesman for the American Lung Association has called sulfur pollution the third leading cause of lung disease, after active and passive smoking. In the atmosphere these pollutants often transform into particle form, become major contributors to unhealthful levels of airborne particulate and to the destruction of air quality in our national parks and elsewhere.

And they are the principal precursors of acid deposition, or "acid rain," a long-term pollution problem whose symptoms include dead and dying species of plants, animals and fish; reduced forest growth; damage to buildings, monuments, structures and other parts of the human environment.

The evidence is mounting that the federal response to sulfur and nitrogen oxide control has been tardy and inadequate.

The proposal before you to tax sulfur and nitrogen dioxide emissions at up to 45 cents per pound is one way to improve the federal response. It is by no means the only way. The Coalition has strongly supported acid rain legislation before the Energy and Commerce Committee, and we continue to support approaches such as that of H.R. 2666.

But studies by the Congressional Budget Office and others suggest the approach you are considering would accomplish the fundamental goal of any clean air program -- it would reduce the pollutants of concern, and it would get results quickly. Beyond that, it would give the polluters their choice of control based on their own economic engineering and geographic circumstances, a policy goal of many supporters of acid rain legislation.

I would like to comment on some of the potential advantages of the emissions fee approach of H.R. 2497 and 2498.

First, the bills begin to produce emission reductions earlier than the regulatory legislation that has previously been proposed. Since many acid rain effects are the result of the cumulative pollution loadings over years, this is an important feature.

Second, emission fees have the potential to be highly cost-effective means of achieving emission reductions, if unencumbered with exemptions for particular categories of sources of pollution.

Third, emission fees will be a powerful incentive for the commercialization of cost-effective "clean coal" technologies, even if the program does not include special subsidies from the proceeds of the tax.

Today, it is the american people who are bearing the cost of excessive sulfur and nitrogen dioxide pollution. The National Academy of Sciences estimates resource damage from acid rain amounts to $7 billion per year, an estimate that is almost certainly low. The American Lung Association surveyed recent cost studies and concluded that the health consequences of air pollution cost perhaps $40 billion per year in health case and lost productivity. The American taxpayer directly bears a portion of that cost in Medicare and Medicaid payments.

Particulate and sulfur pollution reductions required by the Clean Air Act of 1970 saved about $4.4 Billion per year by 1978, according to a study for the Business Roundtable. A further 60% reduction would save up to $16 billion in mortality related costs, and another $25 billion in illness costs.

Your proposal would ask those whose pollution inflicts these costs on our people and our resources to pay a portion, not the total, but a portion, of the costs of that pollution in taxes to the federal government. If they choose, they may reduce their taxes -- and reduce the financial impact of their pollution -- by reducing their emissions of sulfur and nitrogen oxides.

Studies suggest that tax proposals similar to yours would yield a 10 million ton reduction in sulfur dioxide emissions and a substantial reduction in nitrogen oxides. And they suggest that the overall cost to the emitters would be comparable to least cost emissions reduction programs considered elsewhere. In the short term, the federal treasury would recoup for the common good some of the expense that pollution imposes on society. In the long term, society would be served two ways -- by the revenue from a permanent tax, and by the benefits of substantial pollution reductions.

Let me conclude by touching briefly on five counter arguments you will hear.

Argument 1. "A tax is an inappropriate response to the problem."

Response: in the first place, sulfur and nitrogen emissions taxes are a perfectly appropriate source of revenue. Emissions taxes are in use around the world. Any tax you approve should be permanent, and it should be made clear that state utility regulators should only allow a pass-through of that portion of the tax that could not be avoided by more cost-effective emission reductions. This would guarantee a stable source of revenue in the context of a responsible environmental plan.

In the second place, the tax code is always used to further the social as well as economic interests of the country. I am sure members of the Committee would be hard pressed to name a single tax code provision that does not have an adequate justification as good social or economic policy. And every member knows dozens of provisions that are both.

Argument 2. "The energy industry is complicated, and continuous emissions monitoring would be required. Thus, the tax would be hard to administer."

Response: the Congressional Budget Office pointed out in 1986 that the utility industry is "relatively uniform," developing formula estimates would be "straightforward," and the administrative costs of the tax would be "small relative to revenues collected." In addition, many plants already monitor their emissions on a continuous basis, or are already required to. Many more will soon do so as well.

Argument 3. "The tax would put domestic manufacturers at a competitive disadvantage since energy costs would increase."

Response: this old saw is used against every tax proposal. Studies of energy use show energy represents a tiny portion of costs for virtually all manufacturing categories. Industries with relatively high energy use would have a stake in encouraging emissions reductions, and in pursuing energy conservation program that make sense for many other reasons.

Mr. Chairman, the National Clean Air Coalition believes the tax proposal before you delivers on the fundamental goal of clean air policy -- pollution reductions on a fast track. We are pleased to support it. We believe it would become the basis for a more detailed and comprehensive sulfur and nitrogen dioxide reduction program. We believe the health of the American people and the needs of the human and natural environment demand prompt action.

Mr. ANTHONY. Thank you very much.

Mr. Gregg, do you have questions?

Mr. GREGG. I was wondering if you gentlemen could respond in more detail concerning this argument on clean coal technology outlined briefly by Mr. Ayres. I just don't see the logic that passing this tax is going to terminate investigation of these technologies. It seems to me it would accelerate it in the sense it would create a greater economic incentive for the private sector to pursue the technology whereas now the only incentive to pursue it is how many taxpayers' dollars they can get allocated to research on it.

I wonder if you folks agree with that contention or agree with the prior testimony that said this was going to short-circuit—

Mr. AYRES. I agree with your statement very much. As presently outlined by the industry, the clean coal technology program is primarily a program which improves with failure, shall we say. If there is a research program which produces no clean coal technology as the industry would like it, that would mean further delay in the imposition of controls.

We must remember this is an industry which in 1967, 20 years ago, came before the Senate Environment Committee and said "Don't impose emission reductions on us right now, there is a new technology." They didn't call it clean coal at that point. "There is a new technology we are working on that will be ready to go in the early 1970s, please give us time to develop it." That technology was the sulfur oxide scrubber.

Now scrubbers are said to be not good enough, and we are directed to look over the horizon at something new. The best way to get something new, if there is something out there, in my mind is to give a financial incentive to achieve success in finding new and cheaper ways to control emissions, and I think you are very much right on that point.

Mr. GREGG. A second issue, which was alluded to briefly by yourself and I think Mr. Campbell, is the issue of this reduction in the amount of sulfur that is being emitted. We have gone from, I think, 28 million tons down to about 20 million, and it has stabilized there. The information I have read says that is going to go back up.

Do you folks have any out-year projection here, any sense for out-year projections on where we are going with sulfur emissions under the present situation?

Mr. AYRES. As I indicated in my testimony, EPA has had a running project of estimating future emissions. The most recent product of that was done for the agency this spring. And it indicated that sulfur oxide emissions would begin to rise again and that by the year 2010 they would have risen 33 percent over the present levels.

Nitrogen oxide emissions are rising even more quickly than that, and the projection there was close to 60 percent increase by the year 2010.

There are these suggestions from the coal industry that emissions are going down, but when you look at the reasons for that, what you see is they are transitory. The reasons are primarily that generation from coal is down somewhat, in part because oil prices are low, and also because of energy conservation. Those are important trends. But in the future, we can expect to see increasing loads and increasing use of coal and, therefore, increasing pollution. Actually, the rate of emissions from coal-fired power plants is actually up over the last couple of years.

Mr. **Gregg**. Another issue is the question which I thought was framed very well by the Treasury official, Mr. Steuerle, when he said that price should reflect societal cost. The issue of societal cost has been argued by some of the folks who testified before us as being the loss of jobs, loss of competitiveness, and increase in electrical rates such a tax would generate.

You have quoted some figures. You quoted the American Lung figure and you quoted the Academy of Sciences figure. Do you have a gross figure for how much these various pollutants are costing us, not only with respect to the issue of acid rain, but with respect to the issue of acid aerosols, ozone and sulphate, the visibility issue?

Mr. **Becker**. I don't know of a comprehensive overall figure, but if you add to the $40 million the ALA, the American Lung Association, has estimated are the costs in health care and lost productivity, the $7 or so billion, which it is a low estimate of natural resource damage, the damage to buildings and statues, that runs at least $2 billion a year, you come up with a total of almost $50 billion. That is a fairly substantial amount.

And the important point is that whether it is a low or high figure, that cost is being borne entirely by the American people now. And this is, I think, the most important factor for the committee to consider. That is, that there are costs already associated with this pollution, there are health care costs, economic costs, there are budget costs, higher Medicare and Medicaid costs. The American people are now paying all of these costs. Your bill would begin to shift, but not completely shift, that onus onto the polluters.

Mr. **Gregg**. I appreciate all those answers. They are very responsive to my question.

I have no more slow curves to show, so I will yield back.

Mr. **Anthony**. Thank you very much.

Without objection, the testimony that had previously been submitted by the Sierra Club will be submitted for the record in its entirety.

Our thanks to the panel for its testimony.

The next panel is W.R. Grace & Co., represented by F. Peter Boer, senior vice president and group executive, Corporate Technical Group; Prof. Wallace E. Oates, Department of Economics and Bureau of Business and Economic Research, University of Maryland; Alliance for Clean Energy, represented by Harry L. Storey, president; and Coastal Corp., represented by P. Chrisman Iribe, vice president, planning and public affairs, ANR Pipeline Co.

We had been previously notified Professor Oates could not be here until 1 o'clock, so we will start with Dr. Boer.

STATEMENT OF F. PETER BOER, SENIOR VICE PRESIDENT AND GROUP EXECUTIVE, CORPORATE TECHNICAL GROUP, W.R. GRACE & CO.

Mr. **Boer**. Thank you.

Mr. Chairman, members of the subcommittee, ladies and gentlemen, I appreciate your invitation to address the subject of selective catalytic reduction. My purpose today will be to tell you that a proven catalytic process is available to abate nitrogen oxide emissions from power plants.

At the outset, we believe that H.R. 2497 provides a commercially realistic approach to address reductions in sulfur; and for the reduction, its highest tax rates are sufficient to allow the owner of the facility to consider a full range of abatement options and pick the combination that is most suitable for his circumstances. The legislation creates the framework for competition among the suppliers of abatement technology. These factors will lead to the lowest ultimate costs.

Now, we do not view the emission tax approach as a license to pay and pollute. The level of tax and its rate will be critical to the success of the legislation. Differing rates, depending on the amount of emissions, do reflect a rational approach. However, as you have heard, to avoid a pay-and-pollute outcome, sufficient incentive must exist to assure reduction of emissions below the threshold of any tax.

To this end, we suggest that any lower tax rate applicable escalate to the highest tax rate in five annual increments. This provision also is needed if we are to assure the objective of a significant reduction in emissions.

Let me give you some brief background about W.R. Grace. We are not new to the catalyst business. Our roots go back to World War II, and we are now the leading worldwide supplier of catalysts. Grace also is by no means new to the business of controlling air pollution from NO_x. We entered the business when catalytic converters were mandated on American cars in the 1975 model year, and our plant in Baltimore supplies catalysts for about 2 million converters a year to Detroit, and to maintain our competitiveness, Grace employs more than 200 scientists and technicians in the field of catalysts.

Now, with regard to SCR, there can be no doubt the technical and economic performance of the process has been proven since more than 200 coal, oil and gas-fired plants worldwide have retrofitted original SCR units, and they are operating with minimal problems.

Our interests in SCR heightened in 1984 when the German public became alarmed by the dying forest issue, and the German Government mandated control of NO_x emissions from both cars and power plants. The German standards incidentally is 0.16 pounds per million Btu's, which is below this bill's lower threshold of 0.4.

Grace researchers and engineers moved quickly, and in cooperation with our local partners, we made plans that led to the construction of a plant near Bonn. Ours was the first plant to go into operation in Germany. It is sized to provide catalysts for up to one-third of Germany's 46,000 megawatts of generating capacity requiring control. All of that in 3 years.

The selective catalytic reduction technology is a straightforward process. SCR catalysts, which are generally made from clay, vanadium, and titanium, are stacked in towers so that flue gas emissions flow through their channeled structure. Ammonia is injected into the emissions upstream of the catalyst. The NO_x is converted in a simple clean chemical reaction to form two harmless substances, nitrogen gas and water, as it passes down the catalyst channels. The SCR unit is easily retrofitted into existing electric power plants. It can be placed either in front of or behind the desulfurization unit.

To be sure, there are technical issues in every installation requiring some individual design, but it is safe to say that in the majority of cases the SCR process will reliably remove 80 percent of the NO_x and is done at a cost of under 3 mills per kilowatt hour. We see this dropping to about 2 mills with improvements now in the pipeline. Or stated in other terms, this technology will eliminate NO_x at a cost of about $725 per ton.

Recent developments in technology have dramatically affected the economics of SCR. For instance, commercial experience has demonstrated that catalysts can function substantially longer than originally anticipated in coal-burning plants. In Germany competitive forces have already lowered catalyst prices significantly. In addition, research at Grace shows there is additional potential for improved catalytic activity, thus further decreasing costs.

To summarize, then, SCR is not pie in the sky; it has been proven in hundreds of plants at a scale of up to 1,000 megawatts. The decision to implement this technology under H.R. 2497 would be driven by competitive market forces and the requirement to reduce pollution. When that decision is made, we in the U.S. catalyst industry will respond quickly, as we did with auto catalysts, to build the production facilities, make the product, and continue to advance the technology.

Thank you.

Mr. ANTHONY. Thank you very much.

[The statement of F. Peter Boer follows:]

September 9, 1987

TESTIMONY OF DR. F. P. BOER
SENIOR VICE PRESIDENT
W. R. GRACE & CO.

BEFORE

COMMITTEE ON WAYS AND MEANS
SUBCOMMITTEE ON SELECT REVENUE MEASURES

HEARING ON: H.R. 2497
"SULFUR AND NITROGEN EMISSIONS TAX ACT OF 1987"

Mr. Chairman, members of the Subcommittee, ladies and gentlemen, I appreciate your invitation to address the subject of Selective Catalytic Reduction. My purpose today will be to tell you that a proven catalytic process is available to abate nitrogen oxide emissions from stationary sources, especially power plants, and that experienced firms such as W. R. Grace will make the commitment to supply the catalysts.

At the outset, we believe that HR 2497 provides a commercially realistic approach to address reductions in sulfur and nitrogen emissions. The legislation creates financial incentives for the reduction of pollution while at the same time letting marketplace factors determine the best approach. HR 2497 places the decision to abate, and how to abate, in the hands of the businessman -- the owner of the polluting facility. HR 2497's highest tax rates are sufficient to allow the owner of the facility to consider a full range of abatement options and pick the combination that is most suitable for his circumstances. The legislation creates the framework for competition among the suppliers of abatement technology. This will allow the choice of the most efficient answer to the pollution reduction problem and the lowest ultimate costs.

Secondly, we do not view the emission tax approach as a license to "pay and pollute". The level of tax and its rate are critical to the success of the legislation. Differing rates, depending on the amount of polluting emissions, reflect a rational approach. However, to avoid a pay-and-pollute outcome, sufficient inducement must exist to assure reduction of emissions below the threshold of any tax. To this end, we suggest that any lower tax rate applicable escalate to the highest rate in five annual increments. This provision also is needed to assure the objective of a significant reduction in emissions.

As an introduction to our SCR catalytic process, let me give you some background about Grace. W. R. Grace is not new to the catalyst business -- we have roots that go back to World War II, and we have built our business to the point where we are the leading worldwide supplier of catalysts. W. R. Grace also is by no means new to the business of controlling air pollution from nitrogen oxides. In fact, we entered the business when catalytic converters were mandated on American cars in the 1975 model year. Our Davison Chemical Division built a plant in Baltimore, and we supply catalyst for about 2,000,000 converters a year to Detroit.

To sustain our leadership position and to maintain our international competitiveness, W. R. Grace employs more than 200 scientists and technicians in the field of catalysis alone.

There can be no doubt that the technical and economic performance of the SCR process has been proven, where more than 200 coal, oil, and gas-fired plants worldwide have retrofitted or original SCR units and are operating with minimal problems.

Our interest in SCR heightened in 1984, when the German public became alarmed by the "dying forest" issue, and the German government mandated control of NO_x emissions from both cars and power plants. As an immediate result, over 50 pilot plants have been installed and several commercial SCR facilities have been commissioned in Germany.

Grace researchers and engineers moved quickly, and in cooperation with our local partners, we developed the plans that led to the construction of a plant near Bonn. Ours was the first plant to go into operation in Germany. This plant is sized to provide catalyst for up to one-third of Germany's 46,000 megawatts of generating capacity requiring control.

A driving force in our decision to commercialize this technology in Germany was that it would prepare us to produce catalyst in the United States.

The selective catalytic reduction technology is a straight forward process. SCR catalysts, which are generally made from clay, vanadium, and titanium, are stacked in towers so that flue gas emissions flow through their channeled structure. Ammonia is injucted into the emissions upstream of the catalyst. The NO_x is converted in a simple clean chemical reaction to form two harmless substances, nitrogen gas and water, as it passes down the catalyst channels. The SCR unit is easily retrofitted into existing electric power plants. It can be placed either in front of or behind the desulfurization unit (Figure 1).

To be sure, there are technical issues in every installation, requiring some individual design, but it is safe to say that in the majority of cases the SCR process will reliably remove 80% of the NO_x, and is done at a cost of under 3 mills per kilowatt hour. We see this dropping to about 2 mills with improvements now in the pipeline. Or stated in other terms, this technology will eliminate NO_x at a cost of about $725/ton.

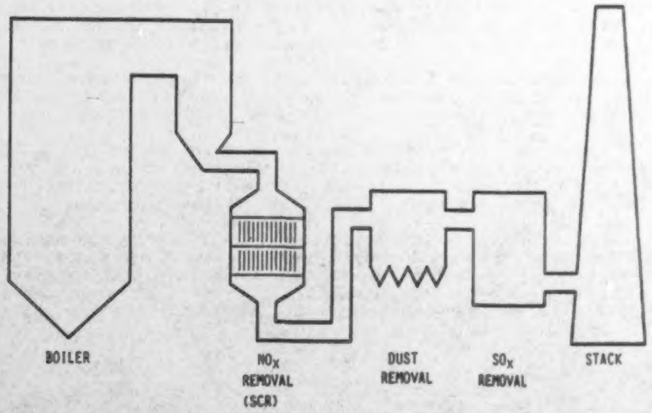
Recent developments in technology have dramatically affected the economics of SCR. For instance, commercial experience has demonstrated that catalysts can function substantially longer than originally anticipated in coal-burning plants. In areas where the technology has been widely adopted, competitive forces have lowered catalyst prices significantly. In addition, developments at Grace show that there is additional potential for improved catalyst activity, thus further decreasing costs.

To summarize, then, SCR is not pie in the sky; it has been proven in hundreds of plants at a scale of up to 1000 megawatts. The decision to implement this technology, under HR 2497, would be driven by competitive market forces and the requirement to reduce pollution. When that decision is made, we in the U.S. catalyst industry will respond quickly, as we did with auto catalysts, to build the production facilities, make the product, and continue to advance the technology.

FIGURE 1

SCR

"SELECTIVE CATALYTIC REDUCTION"



BACKGROUND STATEMENT ON NO_x CONTROL TECHNOLOGY BY SELECTIVE CATALYTIC REDUCTION

1. INTRODUCTION

W. R. Grace is the world's leading manufacturer of catalysts with major plants at Baltimore, Maryland; Lake Charles, Louisiana; Cincinnati, Ohio; Valleyfield, Quebec; and Worms, Germany. The company has over 200 scientists and technicians working on catalysis R & D. Grace is a major player in emission control catalysts, and was one of the first manufacturers of catalysts for automobile emission control. A plant dedicated to this application was put on stream in Baltimore in 1975; it currently produces catalysts for about 2 million vehicles per year.

Our interest in emission control has extended to other areas as well. In the U.S. and Europe, we sell a catalytic system for the reduction of volatile organic emissions from printing plant dryers. Under the scientific direction of Grace Research, Noxeram, a Grace-Feldmuehle venture, built a plant in West Germany to produce catalysts which control power plant NO_x emissions. This commercially proven catalytic technology is known as Selective Catalytic Reduction (SCR).

Our plant is located in Bergisch Gladbach and was the first to go into operation in Germany. The plant is sized to be able to provide catalyst for up to one-third of Germany's need for NO_x power plant emission control in 1991, which amounts to 46,000 MW of installed generating capacity. Indeed, one of the principal driving forces for our growing investment in SCR is our intention to become a leading SCR catalyst producer in the U.S.

The original ammonia injection process for NO_x control was invented in the U.S. about 20 years ago. However, the first commercial applications on power plants were in Japan, beginning in 1974, to meet the NO_x emission standards of that country. To date, SCR technology has been applied to over 200 units in Japan.(1) This technology is now deployed in West Germany to meet recently enacted NO_x control regulations. Due to the strict emission standards and the short deadlines for compliance, SCR has been the process chosen in West Germany for most applications. Over 50 pilot plants have been installed(2) and several commercial SCR facilities have already been commissioned on German boilers. Once the mandated improvements are fully in effect, power plant NO_x emissions will have been reduced in West Germany by about 80%(3).

Interest in the SCR technology is gaining in the U.S. Limited SCR pilot plant testing was conducted in the early 1980's by the EPA and the Electric Power Research Institute (EPRI). In addition, Southern California Edison (SCE) has recently conducted an SCR demonstration at their Huntington Beach Power Station. In EPA-sponsored tests, a successful demonstration of SCR technology on U.S. coal at the 0.5-MW scale was made in 1980 at the Plant Mitchell Station of Georgia Power(4). This was followed in 1982 by EPRI-sponsored tests at the 2.5-MW Arapaho Emissions Test Facility on a coal-fired boiler owned by the Public Service of Colorado(5). Commercial demonstration of SCR in the U.S. on an oil-fired boiler began in 1982 at SCE's facility. By the end of 1985, it had logged over 18,000 hours of operating experience(6).

Widespread commercialization of SCR technology on power plants in the U.S. is awaiting stricter NO_x emission standards than those currently in effect. Areas of California currently have stringent NO_x standards. Here, SCR technology is widely used commercially to reduce NO_x from industrial boilers, refinery heaters, stationary engines, and gas turbines. However, the scale of operations is typically considerably smaller than required by electrical utilities.

2. TECHNOLOGY

The SCR process uses ammonia gas, injected into the flue gas to selectively reduce NO_x over the surfaces of a catalyst to molecular nitrogen and water. This reaction takes place in the range of 300°C to 400°C.

For coal-fired applications, Attachment 1 shows the two options generally available for installation of the catalytic reactor. In one case, the catalyst is placed directly after the economizer outlet. From the reactor, the flue gas flows to the inlet of the air preheater, with the electrostatic precipitator following the air preheater. This is known as the hot high-dust position. The catalyst is designed to withstand the full dust loading from the boiler.

In the second case, the catalytic reactor is placed downstream of the flue gas desulfurization process, away from the rest of the power plant equipment. This is called a cold low-dust position. This design may be more economical for a retrofit application if boiler space restrictions exist; however, this option must be weighed against an additional expenditure for the operation of a flue gas reheat system, which is required to raise the temperature to allow the catalyst to function.

The major equipment required for an SCR system is the catalytic reactor. A typical SCR catalyst is composed of vanadium and tungsten oxides supported on a porous titanium dioxide carrier. The catalyst is usually in the form of a honeycomb monolith (150 mm square by 1 m long), but a number of variations have been developed to support these catalysts. In addition to the ceramic monoliths as produced by Grace, ceramic beads and metal plates have also found some applications. These catalyst elements are packed into a steel frame to form catalyst modules which are installed in several layers in the reactor. The gas flows downward vertically through channels of the honeycomb structure.

SCR reactors are generally designed to achieve 90% NO_x removal (guaranteed performance is typically 80%), while holding SO_2 oxidation to less than 1%. At the same time, the level of unreacted ammonia (ammonia slip) needs to be kept below 5 ppm. Ammonia slip is controlled for two reasons: to avoid its discharge to the atmosphere, and to minimize its reaction with sulfur trioxide to ammonium bisulfate. As the flue gas is cooled in downstream equipment, ammonium bisulfate can form a solid which causes fouling.

The strict specifications outlined above have typically required a large volume of catalyst for emission control. The volume of catalyst and its relatively high price, have traditionally dominated the cost of SCR installations. Better than 60% of the capital and operating costs have been associated with the catalytic reactor (5). Other equipment required for an SCR installation includes a control and injection system for ammonia. Fans are required to overcome the increase in pressure drop caused by the catalyst. Typically, about 0.75 MW of a 100-MW facility is needed to power these fans(6). Changes in ductwork and air preheater design are also required to accommodate SCR.

3. EFFECTIVENESS

SCR has been operating on Japanese utilities for 13 years in oil and gas-fired units and 7 years in coal-fired units. After the first few years with some start-up problems, these facilities have operated in a trouble-free manner and, in fact, some gas-fired boilers have been operating with their initial catalyst charge for more than 10 years. Development of SCR for coal-fired boilers began in the late 1970's and is reaching the same quality of operation in Japan today(7). Some coal units have operated satisfactorily for 6 years with their initial catalyst charge.(8)

In 1985, Ishikawajima-Harima Heavy Industries Co., Ltd. (IHI) published data detailing the performance of several SCR plants over a two-year period(9). These plants were located on coal-fired utilities in Japan. The data indicated that more than 80% denitrification efficiency was achieved with very low ammonia slip. Excellent performance, high efficiency and low ammonia slip were found over a wide range of the operating capacity.

In 1987, Japan's Electric Power Development Company developed a technique to insure a mean catalyst lifetime of four years in their coal service applications (8). By replacing individual catalyst layers on an as-needed basis, reactor systems originally thought to last only one year can be operated at a mean annual consumption rate of four years.

4. U.S. APPLICABILITY OF TECHNOLOGY

An SCR unit can be installed on any gas-, oil-, or coal-fired facility in the United States. The technology is commercially practiced on all three boiler types in Germany and Japan. For coal-fired boilers, however, we expect that the introduction of the technology will require some limited pilot plant testing, as was the case in Germany. This will provide U.S. engineering companies the information and practical experience to base SCR reactor sizing under U.S. conditions.

A number of design changes have been made in Germany to adapt Japan's technology to slagging and brown coal applications. In comparison with Germany, the U. S. obtains a smaller percentage of its power from slagging and/or cyclone boilers. In addition, the great majority of these facilities do not involve fly ash reinjection, thus reducing hazards of heavy metal poisoning of the catalyst. The U.S. power industry is benefiting from the process improvements being developed in Germany today.

5. ECONOMICS

Recent developments in technology have affected the economics of SCR through longer catalyst life and higher activity. In areas where the technology has been widely adopted, competitive forces have lowered catalyst prices significantly. In addition, developments at Grace show that there is additional potential for improved catalyst activity and decreased costs.

The economics displayed on Tables 1 through 3 illustrate the impact of catalyst performance on SCR costs for both low and high BTU coal applications. Wyoming low-sulfur coal is a typical low BTU coal; Illinois No. 6 is a typical high sulfur, high BTU coal. Case 1 is based on technology as it was viewed several years ago, and is based on EPRI-sponsored work; the results were published in 1984(5). Case 2 is indicative of current catalyst performance; the only change relative to Case 1 is an extended catalyst life. Case 3 projects catalyst performance based on a number of improvements targeted by the Grace Research Division. The first of these improvements has been demonstrated and is in the process of being commercialized in Germany.

Levelized costs for all three cases are given in Table 1. The levelization technique involves expressing all the project costs (capital, fixed and variable) in terms of an even payment over the life of the project. These costs were computed based on constant 1987 dollars and a discount rate of 6.1%. Estimates for current technology (Case 2) show reductions over the base EPRI cases (Case 1) of 46% and 41% for the low and high sulfur cases, respectively. Estimates show targeted Grace technology (Case 3) further reduces the costs by more than 20%, compared to the current technology cases.

Additional published estimates (shown on Table 1) indicate that the Case 2 and Case 3 estimates are consistent with other views of the economics(10).

Estimates for NO_x removal costs based on current technology amount to less than 5% of the current cost of electricity. EIA reports average residential electricity cost in the U.S. in 1986 was 7.79 cents(11). Based on projected improved technology, the costs drop to near 3% of current electricity costs.

In other terms, current technology estimates show SCR costs to be less than $1000/ton NO_x removed. Grace expects NO_x removal costs to be about $725/ton NO_x removed for both low and high BTU sulfur coals. Based on the earlier EPRI premise, costs were well over $1500/ton.

Capital requirements for the three cases for each coal are shown in Table 2. The capital required for Case 2, current catalyst performance, is identical to Case 1 because longer catalyst life affects only the operating costs. Case 3 assumes an improved catalyst based on improvements targeted by Grace technology. The 24% lower total capital requirement for the Grace system (for low BTU and low sulfur coal) is the result of a more active, lower cost catalyst which results in a smaller reactor filled with less expensive catalyst. Similar cases are presented for high BTU and high sulfur coal in Table 2.

First-year operating costs for the cases are shown in Table 3. When comparing the base, current and projected cases, the most significant cost reduction is due to reduced catalyst use. For the low sulfur coal cases in Table 3, catalyst cost is reduced by 75%. This is a result of an extension of catalyst life from 1 year in the EPRI base case to 4 years in the current technology case. The catalyst cost in the projected Grace case is reduced by an additional 47% over Case 2 due to the lower overall catalyst requirement due to a smaller reactor, and a reduced purchase price. Results are similar for the high sulfur coal cases in Table 3.

The four-year catalyst life estimate is supported by recent experience in Japan and Germany. Reports from Japan suggest that a four-year life is typical, and that overall catalyst consumption can be decreased even further by using incremental catalyst replacement techniques(8). In Germany, catalyst life is typically guaranteed for three years, although at least four years of operation would be expected.

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(10) J. A. Leggett, E. S. Rubin, I. M. Torrens, "Increasing the Clarity of Pollution Abatement Cost Estimates", EPA-EPRI Tenth Symposium on Flue Gas Desulfurization, Atlanta, Georgia, Nov. 1986.

(11) "Electric Power Monthly", DOE/EIA-0226, January, 1987.

ATTACHMENT 1

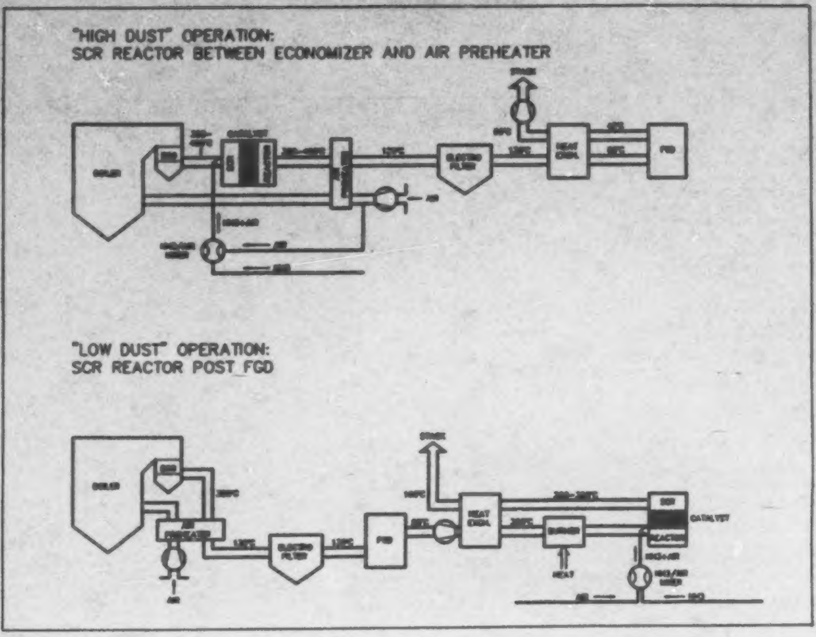
"HIGH DUST" OPERATION:
SCR REACTOR BETWEEN ECONOMIZER AND AIR PREHEATER
STACK
HEAT EXCH.
FGD
"LOW DUST" OPERATION:
SCR REACTOR POST FGD
STACK
HEAT EXCH.
SCR
CATALYST
REACTOR
HEAT
AIR

TABLE 1

TOTAL LEVELISED COST

A. Grace Calculations - EPRI Basis
1987 Constant dollars, 6.1% discount rate

	mills/Kwh					
	Low BTU			High BTU		
	Case 1	Case 2	Case 3	Case 1	Case 2	Case 3
Total Capital (a)	1.68	1.68	1.29	1.48	1.48	1.21
Fixed Operating	0.18	0.18	0.14	0.18	0.18	0.14
Variable Operating	4.68	1.69	1.16	3.32	1.30	0.93
Total Levelized Cost	6.54	3.55	2.59	4.98	2.96	2.28
	Calculation of \$/Ton NO_x Removal					
Net Heat Rate, Btu/Kwh	---10,282---			---9,567---		
NO_x Removed, lb NO_x/mm Btu	---0.692----			---0.657---		
Removal Costs, \$/Ton NO_x	\$1,838	\$ 998	\$ 728	\$1,583	\$ 941	\$ 725

(a) Fixed charge factor of 0.103 per EPRI Guidelines

B. EPDC and UBA Calculations(10)
1984 constant dollars, 3.7% discount rate(b)

	mills/Kwh
Electric Power Development Company (Japan)	1.80
Umweldbundesamt (Germany)	2.50

(b) Assumed fixed charge factor of 0.1175

TABLE 2

SELECTIVE CATALYTIC REDUCTION

CAPITAL COSTS

500 MW plant, 500 ppm NO into SCR, 100 ppm out of SCR

1987 dollars

	$/KW			
	Low Btu, Low Sulfur Coal		High Btu, High Sulfur Coal	
	Case 1&2 (a)	Case 3 (a)	Case 1&2 (a)	Case 3 (a)
Reactor & Catalyst	34.8	21.5	26.6	17.7
Control System	3.8	3.8	3.7	3.7
Ammonia System	7.0	7.0	6.7	6.7
Ductwork Differential	5.6	5.6	6.3	6.3
Air Preheater Differential	3.2	3.2	3.0	3.0
I.D. Fan Differential	1.8	1.4(b)	2.6	2.0(b)
General	1.2	1.2	1.2	1.2
Total Process Capital	57.4	43.7	50.1	40.6
General Facilities	5.9	4.5	4.9	4.0
Engineering & Home Office Fees	7.2	5.5	6.1	4.9
Project Contingency	9.8	7.5	8.5	6.9
Process Contingency	5.5	4.4	7.6	6.1
Total Plant Cost	~~85.8~~	65.6	77.2	62.5
AFDC	3.2	2.5	2.8	2.3
Total Plant Investment	89.0	68.1	80.0	64.8
Royalty Allowance	0.2	0.2	0.3	0.3
Preproduction Costs	4.1	2.8	3.2	2.6
Inventory Capital	0.2	0.2	0.2	0.2
Total Capital Required	93.5	71.3	83.7	67.9

(a) Case 1 - 1-year catalyst life, 1984 EPRI Design
Case 2 - Update of EPRI Design to reflect current 4-year catalyst life
Case 3 - 4-year catalyst life, improved Grace catalyst
(b) 20% reduction in fan cost due to lower backpressure

TABLE 3

FIRST-YEAR OPERATING COSTS

500 MW plant, 500 ppm NO into SCR, 100 ppm out of SCR

$1987

	$/KW					
	Low Btu, Low Sulfur			High Btu, High Sulfur		
	Case 1	Case 2	Case 3	Case 1	Case 2	Case 3
Fixed Operating Costs (a)						
Operating Labor	0.13	0.13	0.09	0.13	0.13	0.10
Maintenance Labor	0.31	0.31	0.24	0.29	0.29	0.24
Maintenance Material	0.46	0.46	0.35	0.45	0.45	0.36
Administrative & Support Labor	0.13	0.13	0.09	0.13	0.13	0.10
Total Fixed Operating Costs	1.03	1.03	0.77	1.00	1.00	0.80
Variable Operating Costs						
Ammonia	1.62	1.62	1.62	1.42	1.42	1.42
High Pressure Steam	0.21	0.21	0.21	0.19	0.19	0.19
Power	2.11	2.11	1.76(b)	1.96	1.96	1.51(b)
Catalyst(c)	22.40	5.60	2.98	15.12	3.78	2.13
Catalyst Disposal	0.24	0.06	0.03	0.15	0.04	0.03
Total Variable Operating Costs	26.58	9.60	6.60	18.84	7.39	5.28
Total Operating Costs	27.61	10.63	7.37	19.84	8.39	6.08

(a) Proportional to Total Process Capital
(b) Proportional to I.D. Fan capital

Mr. ANTHONY. Mr. Storey.

STATEMENT OF HARRY L. STOREY, PRESIDENT, ALLIANCE FOR CLEAN ENERGY

Mr. STOREY. Thank you very much.

Mr. Chairman and members of the committee, my name is Harry L. Storey. I am the president of the Alliance for Clean Energy, or ACE, as we are often called. ACE is a coalition of producers, carriers and consumers of low-sulfur coal. Our member companies have operations in both the eastern and western parts of the United States.

ACE advocates neither new taxes nor new SO_2 controls. I appreciate the opportunity to testify here today on H.R. 2497. H.R. 2497 would, among other things, impose a new tax on sulfur dioxide ("SO_2") emissions, the primary purpose being to reduce such emissions at coal-fired utility power plants.

Mr. Chairman, I want to preface my testimony by saying that ACE does not advocate any new Federal taxes of any kind. I want to make that point clear at the outset so that no one mistakes what I have to say about the advantages of using a tax to control pollution as an endorsement of any such tax.

As most of you know, SO_2 pollution from coal-fired boilers stands accused of being a major contributor to acid rain. So over the past few years, many bills have been introduced to reduce SO_2 emissions in the name of acid rain.

ACE has not, and currently does not, support any acid rain control bill. We believe there is still a considerable amount of scientific uncertainty about the causes and effects of acid rain. But having acknowledged that uncertainty, we are mindful that Congress may nevertheless take action to impose new controls on SO_2 emissions. And even though ACE does not support a specific acid rain control bill, that does not mean we view all SO_2 control proposals in the same light.

In fact, Mr. Chairman, we believe that if Congress decides to enact any new SO_2 reduction requirements, such a program should meet three key policy principles:

Cost-effectiveness. First, SO_2 control legislation should be cost effective. When I speak of cost-effective legislation, I mean legislation that gives those who know best, namely local utility managers, the freedom to choose from the widest range of pollution control options. Cost-effective, freedom of choice legislation will guarantee that U.S. consumers get the largest SO_2 emission reductions for every dollar they spend.

Flexibility. Second, SO_2 control legislation should also be flexible enough to allow for changes as more is learned about the causes and effects of the acid rain phenomenon.

The polluter should pay. Finally, the costs of reducing SO_2 pollution should be borne by those who are causing the excess emissions.

We think all three of these principles are important. Together they will maximize the effectiveness of any new SO_2 control program and ultimately minimize the costs to the consumer.

Turning now to H.R. 2497, first let me say that the bill represents at least in concept, an improvement over many other SO_2 reduction programs. The tax approach to SO_2 control has some very important practical advantages over the prescriptive regulatory approach found in most other bills. I would like to touch on those advantages in just a moment, but first let me tell you about two provisions in the bill that keep it from meeting the policy principles I mentioned a moment ago.

Those two provisions are the tax credit in section 5884 and the sulfur and nitrogen emissions, or so-called SANE trust fund established by section 9510.

Taking the tax credit first: H.R. 2497 allows utilities a credit against the new pollution taxes imposed by the bill. The tax credit is equal to 2.5 percent per year of the capital costs of qualified pollution control equipment. This tax credit, in effect, subsidizes capital-intensive SO_2 compliance strategies like wet scrubbers. By subsidizing capital-intensive devices, the bill puts some less costly strategies at a comparative disadvantage.

There is yet another related problem with the tax credit. It is important to realize that it will tend to discourage widespread commercialization of some of the most promising new techniques to reduce SO_2—like the sorbent injection process, for example. In simple terms, the sorbent injection process involves injecting a sulfur-absorbing compound into coal-fired boilers during the combustion process to chemically reduce SO_2 emissions. SO_2 reduction techniques like sorbent injection are promising precisely because they are not capital-intensive and can be more readily adapted for use at existing power stations.

Turning next to the trust fund: H.R. 2497 says that revenue from the new pollution tax bill will be used primarily to assist taxpayers in reducing the emission of sulfur dioxide and nitrogen oxides. Just how the trust fund revenues will be spent isn't spelled out. But one thing is clear: the trust fund sets up a cost-sharing system, and so it violates the fundamental principle that the polluter should pay.

Mr. Chairman, I want to urge the committee in the strongest way to drop the tax credit and trust fund provisions from the bill. If these two provisions were eliminated, H.R. 2497 would meet the three policy goals I mentioned at the outset.

Moreover, if you drop these two provisions, you will have a program that has a number of practical advantages no other acid rain bill can claim.

This legislation will ensure that SO_2 emissions are reduced as quickly as is reasonably practical. It will do this for two reasons. First it will provide a market incentive to reduce emissions. Presumably, owners of coal-fired boilers who can reduce emissions cheaply will do so as fast as they can in order to lower their tax liability. Second, the tax approach will involve no lengthy rule makings or long, drawnout court appeals that are characteristic of other regulatory approaches.

The pollution tax will also provide a strong market incentive for the development of new ways to reduce SO_2 emissions. Creating a market for new pollution reduction techniques is the best way we know of to make sure that the most promising and efficient ways to reduce SO_2 are commercialized.

Creating a market for new and more efficient ways to control pollution will have an important side benefit. So long as the tax remains in place as an incentive, there is every reason to expect that total SO_2 emissions will continue to decline as increasingly efficient SO_2 reduction techniques are developed.

To sum up, the SO_2 tax in H.R. 2497 has a number of important practical advantages that no other acid rain bill has. If the committee decides to adopt such a tax, however, we want to urge you to drop the tax credit and trust fund so that it is truly a freedom of choice, polluter pays program. We think the bill ought to be indifferent as to how SO_2 emissions are reduced, so long as the job gets done quickly and efficiently.

Thank you again, Mr. Chairman, for the opportunity to share our views on H.R. 2497. I will be glad to answer any questions you may have.

Mr. DOWNEY [presiding]. Thank you.

[The statement of Harry L. Storey follows:]

TESTIMONY OF HARRY L. STOREY
PRESIDENT, ALLIANCE FOR CLEAN ENERGY
BEFORE THE
HOUSE COMMITTEE ON WAYS AND MEANS
SEPTEMBER 9, 1987

Introduction --

Mr. Chairman and members of the Committee:

My name is Harry L. Storey. I am the President of the Alliance for Clean Energy, or "ACE" as we are often called. ACE is a coalition of producers, carriers and consumers of low-sulfur coal. Our member companies have operations in both the eastern and western parts of the United States.

ACE Advocates Neither New Taxes Nor New SO_2 Controls --

I appreciate the opportunity to testify here today on H.R. 2497. H.R. 2497 would, among other things, impose a new tax on sulfur dioxide ("SO_2") emissions, the primary purpose being to reduce such emissions at coal-fired, utility power plants.

Mr. Chairman, I want to preface my testimony by saying that ACE does not advocate any new federal taxes of any kind. I want to make that point clear at the outset so that no one mistakes what I have to say about the advantages of using a tax to control pollution as an endorsement of any such tax.

As most of you know, SO_2 pollution from coal-fired boilers stands accused of being a major contributor to "acid rain". So over the past few years, many bills have been introduced to reduce SO_2 emissions in the name of "acid rain".

ACE has not, and currently does not, support any acid rain control bill. We believe there is still a considerable amount of scientific uncertainty about the causes and effects of "acid rain." But having acknowledged that uncertainty, we are mindful that Congress may nevertheless take action to impose new controls on SO_2 emissions. And even though ACE does not support a specific acid rain control bill, that does not mean we view all SO_2 control proposals in the same light.

ACE Believes New SO_2 Controls Should Meet Three Tests --

In fact, Mr. Chairman, we believe that if Congress decides to enact any new SO_2 reduction requirements, such a program should meet three key policy principles:

- Cost-effectiveness -- First, SO_2 control legislation should be cost-effective. When I speak of cost-effective legislation, I mean legislation that gives those who know best, namely local utility managers, the freedom to choose from the widest range of pollution control options -- and I want to emphasize here that there are many proven control options available today including coal washing, blending fuels, fuel switching, and "wet" and "dry" scrubbers. Cost-effective, "freedom of choice" legislation will guarantee that U.S.

consumers get the largest SO_2 emission reductions for every dollar they spend. We think they are entitled to that guarantee.

- Flexibility -- Second, SO_2 control legislation should also be flexible enough to allow for changes as more is learned about the causes and effects of the "acid rain" phenomenon.

- The Polluter Should Pay -- Finally, the costs of reducing SO_2 pollution should be borne by those who are causing the excess emissions. This is simply a restatement of the "polluter pays" principle that is already embodied in most of our environmental laws.

We think all three of these principles are important. Together they will maximize the effectiveness of any new SO_2 control program and ultimately minimize the costs to the consumer.

H.R. 2497 Could Meet The Three Policy Tests If The Trust Fund And Tax Credit Were Dropped --

Turning now to H.R. 2497, first let me say that the bill represents, at least in concept, an improvement over many other SO_2 reduction programs. The tax approach to SO_2 control has some very important practical advantages over the prescriptive regulatory approach found in most other bills. I would like to touch on those advantages in just a moment, but first let me tell you about two provisions in the bill that keep it from meeting the policy principles I mentioned a moment ago.

Those two provisions are the Tax Credit in Section 5884 and the Sulfur And Nitrogen Emissions, or so-called "SANE" Trust Fund established by Section 9510.

The Tax Credit Is Not Cost-effective Because It Needlessly Favors Capital-Intensive SO_2 Reduction Strategies --

Taking the tax credit first: H.R. 2497 allows utilities a credit against the new pollution taxes imposed by the bill. The tax credit is equal to 2½% per year of the capital costs of "Qualified Pollution Control Equipment". This tax credit, in effect, subsidizes capital-intensive SO_2 compliance strategies like "scrubbers". By subsidizing capital-intensive devices, the bill puts some less costly strategies at a comparative disadvantage. Low-cost strategies like coal washing, and switching from high-sulfur to low-sulfur coals are not capital-intensive, so their use would be discouraged by the credit. Subsidizing capital-intensive pollution control strategies will skew compliance choices, and to that extent, will work against cost-effective decision making.

There is yet another related problem with the tax credit. It's important to realize that it will tend to discourage widespread commercialization of some of the most promising new techniques to reduce SO_2 -- like the sorbent injection process, for example. In simple terms, the sorbent injection process involves injecting a sulfur-absorbing compound into coal-fired boilers during the combustion process to chemically reduce SO_2 emissions. SO_2 reduction techniques like sorbent injection are promising precisely because they are not capital-intensive and can be more readily adapted for use at existing power stations.

It's also worth pointing out in this regard that the Internal Revenue Code already favors capital-intensive pollution controls. Section 169 allows the cost of any "Certified

Pollution Control Facility" to be amortized over 5 years. We see no reason why the Code should be changed to add any new incentives to favor one means of pollution control over others.

The Trust Fund Violates The Polluter Pays Principle --

Turning next to the Trust Fund: H.R. 2497 says that revenue from the new pollution tax will be used primarily to "assist taxpayers... in reducing the emission of sulfur dioxide and nitrogen oxides,...". Just how the Trust Fund revenues will be spent isn't spelled out. But one thing is clear: the Trust Fund sets up a cost-sharing system and so it violates the fundamental principle that the polluter should pay. The Trust Fund is nothing other than a polluter subsidy. It promises to reward those who haven't already reduced their emissions. That's bad policy, plain and simple. It sends a signal that says to polluters, in so many words, if you wait long enough to clean up, then we will make other taxpayers help foot your clean up bill.

Surely there must be better and more worthy ways to use the large revenues this tax will generate.

Mr. Chairman, I want to urge the Committee in the strongest way to drop the Tax Credit and Trust Fund provisions from the bill. If these two provisions were eliminated, H.R. 2497 would meet the three policy goals I mentioned at the outset.

Advantages Of Pollution Taxes Over Prescriptive Regulations --

Moreover, if you drop these two provisions, you will have a program that has a number of practical advantages no other acid rain bill can claim:

- Quickest Practical Emission Reductions --

  This legislation will ensure that SO_2 emissions are reduced as quickly as is reasonably practical. It will do this for two reasons. First, it will provide a market incentive to reduce emissions. Presumably, owners of coal-fired boilers who can reduce emissions cheaply will do so as fast as they can in order to lower their tax liability. Second, the tax approach will involve no lengthy rule makings or long drawn-out court appeals that are characteristic of other regulatory approaches.

- The Tax Encourages New Pollution Reduction Techniques So Emissions Will Continue To Decline --

  The pollution tax will also provide a strong market incentive for the development of new ways to reduce SO_2 emissions. Creating a market for new pollution reduction techniques is the best way we know of to make sure that the most promising and efficient ways to reduce SO_2 are commercialized.

  Creating a market for new and more efficient ways to control pollution will have an important side benefit. So long as the tax remains in place as an incentive, there is every reason to expect that total SO_2 emissions will continue to decline as increasingly efficient SO_2 reduction techniques are developed.

To sum up, the SO_2 tax in H.R. 2479 has a number of important practical advantages that no other acid rain bill has. If the Committee decides to adopt such a tax, however, we want to urge you to drop the Tax Credit and Trust Fund so that it is truly a "Freedom of Choice," "Polluter Pays" program. We think the bill ought to be indifferent as to how SO_2 emissions are reduced, so long as the job gets done, quickly and efficiently.

Thank you again, Mr. Chairman, for the opportunity to share our views on H.R. 2497. I will be glad to answer any questions you may have.

STATEMENT OF WALLACE E. OATES, DEPARTMENT OF ECONOMICS AND BUREAU OF BUSINESS AND ECONOMIC RESEARCH, UNIVERSITY OF MARYLAND

Mr. OATES. I am happy to have an opportunity to appear before the committee to speak on the taxation of pollution. I might mention, by way of introduction, that I am an academic economist at the University of Maryland with a longstanding research interest in environmental policy. The taxation of pollution is a measure that has long been urged by the economics profession; in fact, it is one of a relatively few matters on which an economist can, I think, enlist the support of virtually the entire profession.

At least as a matter of principle, the taxation of pollution has a very compelling economic rationale, and it is very encouraging and really quite exciting to see it embodied in what I think is a very intriguing and promising bill.

The taxation of pollution is not only appealing in terms of its environmental effects, but it is also a very attractive tax instrument. Most tax instruments have detrimental side effects on the operation of the market system. In contrast, pollution taxes promise just the opposite, beneficial side effects. In terms of building a tax system that is conducive to the effective operation of the market system, this is an appealing instrument indeed.

The basic case for pollution taxes stems from a straightforward extension of the logic of a market system; in fact, if one looks at economic textbooks, pollution taxes are the classic cases used time and again as illustrations of an appropriate corrective tax.

The basic argument here might be termed that of the missing price. The proper functioning of a market system requires the emergence of a set of prices that serve as signals to direct resources to their most productive use. For most goods and services which are bought and sold by buyers and sellers, the market forces of supply and demand themselves lead to the emergence of a proper price.

But there are certain circumstances in which important commodities and certain environmental resources, like clean air and water, do not get priced properly through the market. In fact, clean air frequently has no price attached to it at all, and it is no surprise to an economist that a scarce resource that is made available free of charge gets used to excess.

So the basic argument from an economic perspective is that the pollution tax fills the gap of this missing price. Take, for example, a factory which spews smoke into a residential neighborhood. Such a factory uses up part of society's scarce resources, namely clean air, and imposes a cost on the residents of this neighborhood. But unlike the other resources which it uses; namely labor and raw materials, this is not a cost which the factory owners are forced to bear.

Consequently, there is no market incentive to economize on the use of clean air or clean water or other scarce environmental resources. This is the basic economic case for the use of pollution taxes; namely to provide a price that is missing and thereby to correct what is a classic case in the economic literature of market failure.

The economic case then is a very fundamental one for pollution taxation; it is to correct a basic defect in the market system for allocating scarce resources. The government comes in and imposes the missing price in the form of a tax on pollution.

I would also mention that from this perspective, pollution taxes are a very attractive revenue instrument. Most of our major taxes, like income and sales taxes, have side effects associated with the incentives they generate for economic units in the economy. There is now a large body of work suggesting that the side effects of taxes on wage income, for example, have seriously distorting effects on the economy, effects that result in economic losses over and above those of the revenues that are collected. To the extent that we can replace revenues from these harmful taxes with revenues from a tax on pollution, we can establish a tax system that is more conducive to the effective operation of our economy.

Next, I would like to offer one general observation and four suggestions on H.R. 2497.

My first and general point is that the attractive thing about the bill is that it taxes the right thing: it taxes directly, emissions of sulfur and nitrous oxides. It is not a tax on profits or some other aspect of the operation of polluting firms and industries. It taxes waste emissions directly, and in this way establishes the incentives that are necessary, to cut back on emission of these pollutants.

So in this sense, the bill is on the right track, and it is different from certain legislative measures that have been introduced in Europe which haven't addressed directly the cutback in these emissions. The tax base under this bill is the correct tax base.

There are four suggestions, however, that I would offer. I think, first of all, that the progressive rate structure embodied in the bill is ill-advised. There is no real economic rationale for this progressive tax structure. Our objective is to reduce sulfur emissions in the least costly way, and from that perspective, a pound of sulfur should be treated as a pound of sulfur, irrespective of the rate of emissions of the pollution. In fact, taxes on emissions at different rates actually compromise some of the cost saving properties of the tax.

Second, I think there is some reason to preserve flexibility for the tax rate in the bill rather than getting locked into a tax rate that might prove later to be either too high or too low.

Third, I would echo the sentiments of the previous speaker as to the undesirability of the trust fund. I think one of the attractive things in this proposal is that it provides an opportunity to bring into the general revenue system a very attractive tax instrument. To funnel these funds into a trust fund where they will get used for something else strikes me as an undesirable feature of the bill. It is a much more appealing idea to have these funds available to help reduce the deficit in the budget and later on to decrease reliance on other more harmful forms of taxation.

My fourth point is a more delicate one in that it addresses some issues that I realize are not under the cognizance of this committee, but which bear in an important way on this proposal. For a pollution tax to do its job, the polluting industry must be free of other sorts of regulatory constraints on its choice of control techniques. The role of the pollution tax is to provide a signal that will lead to the adoption of the most effective and least costly means of reducing waste emissions. However, if industries are already saddled with restrictive technological regulations that prescribe what treatment procedures will be, then the tax has effectively been preempted and cannot perform its allocative role. Somewhere along the line, some attention has to be given to the way in which the tax on pollution would relate to other pollution control measures.

Thank you.

Mr. DOWNEY. Thank you.

[The statement of Wallace E. Oates follows:]

September 9, 1987

Testimony on H.R. 2497
On a Tax on Sulfur Dioxide and Nitrogen Oxide Emissions: Testimony Before the House Ways and Means Committee

Wallace E. Oates
Department of Economics and Bureau of Business and Economic Research, University of Maryland

I am happy to speak on behalf of the taxation of pollution. Economists have long urged such measures. In fact, this is one of a relatively few matters on which an economist can enlist the support of virtually the entire profession. The taxation of pollution has a compelling economic rationale--one that suggests not only that such taxation is needed, but that also provides some guidance on the form of the tax. It is encouraging to see it given serious attention in environmental legislation, and I commend Representative Gregg for this innovative and promising bill.

Pollution taxes can offer not only an effective policy approach to protection of the environment, but they can provide a very appealing addition to the revenue system. Most taxes have harmful side effects on the economy; they distort economic choices so that the true cost to society of these taxes is well in excess of the tax monies that people pay. Taxes on pollution, in contrast, have socially beneficial side effects; they effectively cost society less than the revenues they produce. From the perspective of the revenue system as well as that of the environment, the taxation of pollution is a very attractive policy measure--one that has been too long overlooked in the design of our fiscal and environmental programs.

In the first part of my remarks, I will develop the economic case for the taxation of pollution; in the second section, I will explore the role of such taxes as a revenue device; and in the third and concluding section, I will offer some specific remarks on the proposal under consideration, H.R. 2497.

1. The Economic Case for the Taxation of Pollution

The economic rationale for pollution taxes is really just a straightforward implication of the logic underlying a market system. The proper functioning of a system of free markets depends on the emergence of a set of prices that accurately reflects the cost to society of the resources used in the production of goods and services and of these goods and services themselves. Prices are the basic signals in a market system that direct the flow of resources to their most productive use. For most goods and services, the market forces of supply and demand generate the proper price.

There are, however, certain circumstances under which such prices may not emerge--and pollution is a classic case of such a circumstance. The basic point is straightforward: the absence of an appropriate price for certain of our scarce environmental resources such as clean air and water has led to their careless and excessive use resulting in what the textbooks call a case of "market failure." A producer, for example, whose factory spews smoke on a neighboring residential area is using up a scarce resource, clean air; put slightly differently, he is imposing a real cost on those who must live with the dirty air. But the firm need not bear this cost, as it does for the other resources--the labor and raw materials-- that it employs. The price of labor and materials leads the firm to economize on their use, but there is no such incentive for the firm to control its smoke emissions. The basic point is simply that, whenever a scarce resource is made available free of charge (as is the case where individuals have free access to our limited stocks of clean air and water), it is bound to be used to excess. Producers and consumers alike must bear the costs that their activities impose on others if they are to be expected to adjust these activities in light of these costs.

From this perspective, the source of excessive environmental degradation is the absence of an appropriate price for an important class of society's scarce resources. This insight has a direct policy implication: what is needed is for the government to intervene and, in the absence of the interplay of supply and demand, to impose an artificial price, a tax (or effluent fee, as it is sometimes called) on damaging waste emissions. It is easy to show in terms of microeconomic analysis that if this tax is ~~set~~ equal to the value of the damages from an additional unit of emissions, then sources will have the proper incentive for controlling their discharges of pollutants.

Economic analysis thus suggests the need for taxation of pollution to correct for a serious "failure" in a competitive market system. Such taxes are "corrective" measures that are required for the effective functioning of markets, rather than impediments to the market system. Economists, as I have mentioned, are virtually unanimous in their support of the use of pricing incentives for protection of the environment. But to their dismay, they have not had much influence on the design of environmental policy. Instead, regulators across the world have opted not for these kinds of pricing instruments, but rather for the more traditional "command-and-control" (CAC) techniques under which the environmental agency specifies the levels and kinds of treatment procedures to be adopted by polluters.

There is now a large body of empirical work that documents the enormous waste associated with these CAC programs. It is virtually impossible for the environmental authority to know what the most effective and least costly control technology will be for each source--inefficiencies in CAC programs are thus inevitable. And they are very large in magnitude. Existing studies of U.S. programs for the management of air and water quality find that the control costs to polluters run from about twice to, in some instances, over ten times the least-cost outcome! We are paying far more than necesary to cleanup the environment.

Probably even more important than this distortion in the choice among existing control technologies is the lack of any compelling incentives for research and development activities in abatement technology. Over the longer haul, the success of our environmental programs will depend critically upon our capacity to discover and employ more effective and less costly methods of pollution control. The CAC approach not only fails to provide such incentives but may actually discourage such pursuits. A source that finds a new and better way to control its waste discharges may be "rewarded" by the environmental agency with a tougher set of abatement directives.

In contrast, a system of pollution taxes provides a powerful set of incentives to sources, first, to select the proper control technology among existing options, and, second, to seek out new and more effective abatement procedures. Such activities are directly profitable to polluters, since they reduce costs. A firm, for example, that discovers a less expensive way for controlling its waste discharges can employ this new technique to reduce its discharges yet further. It will realize savings both on its control activities and on the reduced tax bill associated with a lower level of waste emissions. And note that society benefits from the cleaner environment that results. A system of pollution taxes effectively harnesses the powerful market force of competition on behalf of environmental protection.

2. Taxes on Pollution as a Source of Revenues

The basic economic rationale for the taxation of polluting activities is thus to correct a malfunctioning in the market system--namely the absence of an appropriate price on our scarce environmental resources including clean air and water. This implies that the level of tax rates should be determined by our environmental objectives, not by revenue considerations. Tax rates should be set such that waste discharges are cut back to levels consistent with our targets for air and water quality. Nevertheless, such taxes will naturally produce revenues for the public sector.

Taxes on pollution would constitute a very appealing component of our overall revenue system. Any system of taxation creates a myriad of incentives for individuals and firms, incentives that lead to a variety of adjustments in economic behavior. What is troubling is that the vast majority of these adjustments are harmful: they introduce distortions into the functioning of the economy with resulting losses in social welfare. A tax on wage or salary income, for example, not only raises revenues but also alters work incentives for individuals. If 50 or 60 cents of an extra dollar of income is drained off in additional taxes, people have a compelling incentive to cut back on work effort and to substitute untaxed leisure pursuits for income-producing activities. The welfare loss to society from such distortions is not trivial. In a recent survey of the empirical work on this issue, Edgar Browning reports that although there remains great uncertainty concerning the magnitude of the distortion associated with taxes on labor earnings, it is potentially very large.[1] Estimates range from a low of about 8 cents lost per dollar of tax revenues to an upper bound in excess of $1.00! Thus, the true costs to society of the taxes we pay are larger (and probably much larger) than the amounts of revenues actually collected.

In contrast to taxes on income or sales, taxes on pollution improve rather than distort the operations of the economy. As I argued in the preceding section, taxes on the discharge of damaging pollutants are "corrective" taxes; they remove obstacles to the efficient functioning of our economic system. Where most taxes have harmful side effects on the economy, taxes on pollution have beneficial effects. The taxation of pollution can thus serve two important social and economic objectives: it can raise needed revenues for the government sector in a non-distorting way and it can provide needed protection for our scarce environmental resources.

The revenue potential of pollution taxes, while not trivial, would seem to be modest. In a detailed study of the potential revenues from the taxation of sulfur and particulate matter emissions from stationary sources in the United States, David Terkla has estimated that annual revenues in 1982 dollars would range from a lower bound of about $1.8 billion to a high of $8.7.[2] The great bulk of these revenues, incidentally, would come from the tax on sulfur discharges with the revenue estimates for this tax alone ranging from a minimum of $1.7 billion to an upper bound of $8.5 billion. Another recent estimate, this one prepared by the staffs of the Joint Committee on Taxation and the Committee on Ways and Means, puts annual revenues from a tax of 45 cents per pound on sulfur and nitrogen dioxide emissions from boilers and furnaces at about $6.3 billion.

These revenue estimates are not large when compared to the overall revenue needs of the public sector. Pollution taxes obviously could not replace in their entirety the major taxes, such as income and sales taxes, in our revenue system. Nevertheless, they have a potential role to play. A broader set of pollution taxes encompassing most of the major air and water pollutants (and perhaps other wastes as well including those, for example, that find their way into landfills) would obviously produce more tax receipts. These monies could relieve pressures for injurious increases (or perhaps permit decreases) in rates of the major forms of taxation.

Revenues from pollution taxes could thus substitute to some extent for those from "harmful" taxes. It is interesting in this respect that David Terkla, in his forementioned study of the revenues from taxes on sulfur and particulate emissions, also explored the potential "efficency gains" from the use of these taxes. These are the gains that result from removing the distortions to the economy that result from such taxes as those on income. And these gains turn out to be of measurable significance. Terkla calculates that if his estimated revenues from the taxes on sulfur and particulate matter were substituted for tax receipts from labor income, there would be a savings to society ranging from $0.6 billion to $3.1 billion. If these revenues were substituted for corporate income taxes, the efficiency gains would be even larger--ranging from $1 billion to $4.9 billion. These results suggest that the gains from an improved functioning of the economy might offset as much as a half of the revenues themselves.[3] Pollution taxes thus offer an appealing opportunity to adjust the tax system in a way that reduces reliance on the more harmful forms of taxation.

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[1] Edgar K. Browning, "On the Marginal Welfare Cost of Taxation," American Economic Review, vol. 77 (March, 1987), pp. 11-23.

[2] David Terkla, "The Efficiency Value of Effluent Tax Revenues," Journal of Environmental Economics and Management, vol. 11 (1984), pp. 107-123.

3. Some Comments on H.R. 2497

The general case for pollution taxes thus rests on a firm economic foundation. I wish to turn next to the specific bill under consideration and to examine its provisions from the economic perspective developed in this paper.

I stress at the outset that unlike certain tax ordinances in other countries, this proposed measure taxes the right thing: it is not a tax on the sales or profits of polluting industries--it is a tax levied directly on damaging waste emissions. This is critically important, for the rationale for the tax is to provide a direct incentive for polluters to cut back on their waste discharges. This bill proposes a tax that would do just this: polluters would find that reductions in their discharges translate directly into reduced tax bills. This would provide the desired incentive to seek out and employ methods for the reduction of polluting waste emissions.

There are some ways in which I believe that the bill could be strengthened, and certain other matters that merit consideration. In particular, I offer five comments on the proposed bill:

(1) The progressive rate schedule defined in the bill is ill advised. Since one objective is to reduce aggregate emissions at the least cost to society, waste discharges among different sources should be considered on a one-to-one basis; a "pound" of sulfur emissions is effectively a "pound" of emissions irrespective of its source. This implies that the same tax rate should apply to all emissions; the rate should not vary with sources' levels of discharges. Such a varying rate schedule will compromise some of the cost-saving properties of the tax.

(2) It is desirable to have some flexibility over the tax rate. It might turn out, for example, that the rate prescribed in the bill is insufficiently high to attain our targetted level of air quality. Or, alternatively, the rate could be so high as to lead to "excessive" cleanup at very high cost to society. It is important in such instances to have the capacity to adjust the tax rate to the proper level. This doesn't mean that rates need to be adjusted every month or so, but rather that we shouldn't lock ourselves into a single rate over a long period of time; there need to be opportunities to review the rate.

(3) I am uneasy with the bill's proposal to use the revenues from the tax to establish a trust fund. As I discussed in section two, the revenues from pollution taxes provide an excellent opportunity to adjust our revenue system so that it places less reliance on those kinds of taxes that are injurious to the economy. From this perspective, the revenues from pollution taxes constitute a welcome addition to the public sector's general revenues; they can serve at present to reduce the deficit in the budget and later to reduce levels of other more harmful taxes. The trust fund, in contrast, would serve to funnel these funds off to other uses.

(4) For pollution taxes to be effective, they must not be accompanied by technological regulations on polluters. The taxes themselves provide the incentives for sources to seek out and use the least-cost methods for controlling their emissions. If the environmental agency has prescribed treatment procedures for polluters, then taxes obviously cannot perform this function. The basic rationale for pollution taxes would have been compromised. I place special emphasis on this point, for it is fundamental to the proposal for pollution taxes. Such taxes cannot be "overlaid" on a CAC system of regulated technologies without destroying the efficiency-enhancing properties of the effluent tax system.

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[3] I should note that these efficiency gains reflect the increase in economic welfare associated with an improved allocation of resources; they will not manifest themselves directly in any financial or fiscal flows of monies.

(5) Finally, I simply point out that there is an intriguing market incentive for pollution control that is an alternative to pollution taxes: a system of transferable discharge permits. Instead of taxing sources on their emissions, the environmental authority can issue a limited number of permits (where the number is kept sufficiently low to achieve the environmental target). Sources are then free to buy and sell these discharge permits. It is easy to show that, in principle at least, such a system has the same cost-saving properties as a system of pollution taxes--namely that it can achieve the target level of environmental quality at the least cost to society. Permits may have some advantages over taxes; for one, they give the environmental agency a direct control over the level of emissions through control of the number of permits (rather than indirect control through regulating the level of the tax rate on discharges). The Environmental Protection Agency has gone some distance toward such a system with its Emissions Trading Program for the control of certain air pollutants. However, taxes have their appeal as well: they present a direct price incentive to sources (without the need to organize a market in discharge permits) and raise needed tax revenues. The choice between these two market instruments for pollution control is a fascinating issue in policy analysis. My own sense is that each has its own important place in the broader spectrum of policies for management of the environment.

H.R. 2497, embodying the principle of taxing polluting waste discharges, is an important, path-breaking piece of legislation. It brings before us a long neglected, but potentially highly beneficial, form of taxation--one that can both improve our overall revenue system and provide more effective control of pollution. I hope that its authors will consider carefully the issues that I have raised for the correction of the proposed bill's shortcomings. If these issues can be successfully addressed, the bill would represent an enormous step forward in the control of pollution.

Mr. DOWNEY. Mr. Iribe.

STATEMENT OF P. CHRISMAN IRIBE, VICE PRESIDENT, PLANNING AND PUBLIC AFFAIRS, ANR PIPELINE CO., ON BEHALF OF THE COASTAL CORP.

Mr. IRIBE. Thank you.

Mr. Chairman and members of the committee, my name is P. Chrisman Iribe. I am vice president of planning and public affairs for ANR Pipeline Co., a subsidiary of the Coastal Corp., a Houston-based diversified energy firm with principal operations in natural gas pipelines, oil and gas exploration and production, petroleum refining and marketing, chemicals, coal and trucking.

Let me say at the outset that while coastal is not at this time an advocate of any particular acid rain legislation, it is supportive of appropriate congressional efforts to reduce SO_2 emissions. We believe appropriate efforts are those that minimize implementation and enforcement costs, while directly addressing the worst SO_2 emission sources.

H.R. 2497 generally meets these goals, except that we would make two suggestions. The first relates specifically to increasing the flexibility that polluters have in meeting the emission reduction goals. Most specifically, the tax credit mechanism in the bill, as it presently stands, we believe, should be eliminated.

The problem with the credit mechanism is that it subsidizes capital intensive SO_2 compliance strategies like scrubbers and puts less capital intensive strategies, such as fuel switching, at a significant disadvantage. Subsidizing capital intensive pollutant strategies may not be the best choice among existing alternatives and perhaps even more importantly, as other gentlemen before me today have cited, could seriously hamper the development of new antipollution technologies as the current technologies are supported by the tax credit process.

The second area we are concerned with is the use of the SANE trust fund to assist in funding emission reduction processes. For the same reason as the flexibility in the tax credit mechanism we are concerned the trust fund will simply encourage use of existing capital intensive strategies.

Our suggestion, in lieu of targeting the trust fund for construction of emission reduction facilities, is to target the trust fund dollars for deficit reduction. With those two changes, the Coastal Corporation could support H.R. 2497. We believe that it would have the salutary effect of discouraging SO_2 emissions and increasing the economic benefits by reducing the deficit.

Thank you.

[The statement of P. Chrisman Iribe follows:]

TESTIMONY OF P. CHRISMAN IRIBE
VICE PRESIDENT, ANR PIPELINE COMPANY
BEFORE THE
HOUSE COMMITTEE ON WAYS AND MEANS

September 9, 1987

Introduction --

Mr. Chairman and members of the Committee:

My name is P. Chrisman Iribe. I am vice presdient of planning and public affairs for ANR Pipeline Company, a subsidiary of The Coastal Corporation, a Houston-based diversified energy firm with principal operations in natural gas pipelines, oil and gas exploration and production, petroleum refining and marketing, chemicals, coal and trucking.

I appreciate this opportunity to testify on H.R. 2497. As I understand it, the primary purpose of H.R. 2497 is to mitigate acid rain by reducing sulphur dioxide (SO_2) and nitrogen oxide (NO_x) emissions at utility power plants and certain large industrial boilers. And to accomplish that objective, H.R. 2497 would impose a new tax on SO_2 and NO_x emissions released from any fossil-fuel fired boiler with a capacity of above 100 million BTUs per hour, with exemptions for certain boilers with low emissions.

Let me say at the outset that while Coastal is not at this time an advocate of any particular acid rain legislation, it is supportive of appropriate Congressional efforts to reduce SO_2 emissions. We believe appropriate efforts are those that minimize implementation and enforcement costs, while directly addressing the worst SO_2 emission sources.

H.R. 2497 generally meets these goals, with appropriate changes highlighted later in my statement. We further believe that the tax revenues generated by H.R. 2497 should be used to help address another overriding national issue, namely the Federal budget deficit. Therefore, the proceeds should be directed to a Deficit Reduction Trust Fund in lieu of the proposed "SANE" Trust Fund.

Coastal Believes New SO_2 Control Must Meet Certain Criteria --

Let me first address the criteria that Coastal believes should be incorporated in SO_2 emission prevention legislation:

- Cost-effectiveness -- To be cost-effective, SO_2 legislation must allow freedom of choice. It must give those who are the most knowledgeable about a specific situation, namely local utility managers, the leeway to choose from a wide variety of pollution control options, options such as coal washing, fuel switching and fuel blending, as well as "wet" and "dry" scrubbers. Only such freedom of choice will guarantee that American consumers receive the benefits--of the greatest SO_2 emission reductions at the lowest cost.

- Flexibility and Targeted Penalties -- Unless SO_2 control legislation is flexible, it will not be able to respond to the changes that become necessary as more is learned about the causes and effects of the acid rain phenomenon and will finally necessitate additional action and legislation. Moreover, the costs of reducing SO_2 pollution should be borne by those who are producing excess emissions. Making the offender responsible for redress is a principle embodied in most of our environmental laws.

Addressing these goals will maximize the effectiveness of a new SO_2 control program and minimize costs to consumers.

H.R. 2497 Would Meet Those Criteria If The Tax Credit Were Eliminated and the Trust Fund Were Changed --

Turning now from generalities to specifics, H.R. 2497 represents, at least in concept, an improvement over many other SO_2 reduction programs that have been suggested. The tax approach, in particular, has some very important advantages over the prescriptive regulatory approach found in most other SO_2 control bills.

In fact, only two provisions in H.R. 2497 keep it from meeting the criteria Coastal believes are requisite. Those provisions are the Tax Credit in Section 5884 and the Sulfur and Nitrogen Emissions or "SANE" Trust Fund established by Section 9510.

H.R. 2497 allows utilities a credit against the pollution taxes imposed by the bill. That credit is equal to two and one-half percent per year of the capital costs of "Qualified Pollution Control Equipment." And that credit, in effect, subsidizes capital-intensive SO_2 compliance strategies, like scrubbers, and puts less capital strategies, like coal washing and fuel switching, at a disadvantage.

Subsidizing capital-intesive pollution strategies may not be the "best" economic choice among existing alternatives and could seriously hamper developing anti-pollution technologies.

Another case in point against establishing a new tax credit is the fact that, in essence, one already exists. The Internal Revenue Code already favors capital-intensive pollution controls. Section 169 allows the cost of any "Certified Pollution Control Facility" to be amortized over five years. And, as Coastal see it, that's enough. We don't need additional incentive that favor one method of pollution control over others.

Now, turning to the proposed Trust Fund: H.R. 2497 says that revenue from the new pollution tax will be used primarily to "assist taxpayers... in reducing the emission of sulphur dioxide and nitrogen oxides..." The Trust Fund appears to set up a cost-sharing system, and in so doing, violates our fundamental principle that the polluter should pay.

It appears to reward those who haven't already reduced their emissions by funding their clean-up efforts. In effect, such funding could heavily bias the clean-up method towards capital-intensive equipment, ultimately creating the same flexibility "limiting" environment cited in the tax crediting process above.

Thus, the Trust Fund as presently targeted is highly inappropriate. Instead, it would have merit if the large revenues generated by the "pollution" tax and placed in Trust were earmarked for federal deficit reduction. Coastal could support a Trust Fund, if its proceeds were designated for that purpose.

Mr. Chairman, I urge you and the Committee to drop the Tax Credit altogether and to rethink how the proceeds of any Trust Fund should be spent. I am sure that you are as concerned with the long-term harm that the growing national deficit has on our economy. Enacting by H.R. 2497 would improve the national environment by discouraging SO_2 emissions, and using the funds it raises would simultaneously help to improve the national economic environment through deficit reduction.

With those changes, H.R. 2497 would meet the policy goals I outlines earlier and the U.S. would have a pollution control program with a number of practical advantages no other currently proposed SO_2 emissions reduction bill contains.

Mr. Downey. Thank you.

Mr. Duncan.

Mr. Duncan. Thank you, Mr. Chairman. I have no particular questions other than to thank the panel for your excellent testimony. I think it has been one of the better panels we have had today. Thank you.

Mr. Downey. It has been one of the better panels. It is your unanimous opinion, I take it, the trust fund is an idea whose time has not come?

Mr. Boer. That is not our position at Grace. We think basically the trust fund—and maybe because we have a parochial interest, we are interested in a relatively capital intensive technology—we think would be helpful in its implementation.

Mr. Downey. Thank you.

Mr. Storey. That certainly is our position.

Mr. Downey. Thank you. I appreciate your testimony, Dr. Oates. It is especially interesting. We on occasion try to follow an academic path. Usually it gets reversed on the floor. But this is certainly something worth looking at. Whenever Mr. Gregg and I agree on anything, it is certainly worth looking at further, since our consonance on issues is not great.

Mr. Gregg, do you have any questions?

Mr. Gregg. Thank you, and I am honored to be joined by Mr. Downey on this issue. He and I can make a good team to address this environmental concern.

Dr. Oates, I was fascinated by your testimony. I think everybody's testimony was excellent, but I was especially interested in yours, in your assessment of economic impact. You essentially disagree, I take it, with the philosophy expressed early this morning, which is essentially that the cost of undertaking this type of an environmental action to correct the environmental damage would be such in the area of lost jobs and lost competitive edge that it would not be appropriate to proceed down this path. Is that true?

Mr. Oates. What the shorter-run effects of such a measure would be, I think, are hard to predict. It certainly would involve some increase in costs, in polluting industries, but in a way that is as it should be. Industries which use up scarce resources, and in this case we are talking about clean air and clean water, must bear the cost of these things just as they must bear the cost of the labor and raw materials they use in order that the market system works properly.

To turn the question around slightly, by making these resources available free, we are effectively subsidizing operations of these kinds of industries, because they are not bearing the full costs they are imposing on society. This leads, certainly over the longer haul, to excessive environmental degradation.

In the short run, and there will admittedly be some adjustments among industries, but that is the whole point of the measure.

Mr. Gregg. Thank you.

Is it possible, Dr. Boer, to bifurcate the trust fund issue? We have heard from Treasury that they don't want the trust fund. We have heard from a number of people who have testified here that they think the trust fund is inappropriate. We have heard from the industry that they don't want any activity in this area, that they don't want regulation, and that they don't want economic incentives.

So could we just apply the trust fund to nitrogen emissions and that would address Mr. Storey's problems in the sulfur area, they would use coal switching, and in nitrogen, they would have access to the trust?

Mr. **Boer**. I think the answer is yes. I think the trust fund is helpful in speeding the rate of implementation of some of the most effective technologies, but I don't think it is essential, and I think you can achieve that result by other methods by setting the appropriate rate structure, or possibly on the other side, by regulating the emissions levels. So that I don't think the trust fund is an essential part of the bill. It happens to be helpful in general and helpful to our technology, but certainly not essential. I don't think we see that as a critical item.

Mr. **Gregg**. Thank you. I yield back my time.

Mr. **Downey**. Mr. Duncan.

Mr. **Duncan**. Dr. Boer and also Professor Oates, have you given any thought as to how much our industry can afford in the way of trust funds? You know, we have to compete in international markets, and we have had testimony this morning from some industries that we would not be able to compete against imports and so forth. I am for some kind of clean air but without jobs, it is pretty hard to be hungry and appreciate the air we have.

There are effects the proposal may have on some areas of the country. We have heard that utility bills may go up as much as 27 percent. I know there no industry in my district that could afford that kind of an increase because the industries there are choking now with high energy costs.

Mr. **Boer**. If I could comment on that, I think some of these numbers may be higher than they will turn out. I think you can get about half of the NO_x in this country out for about $2 billion a year. Now that is not cheap, but consider the fact that our economic competitors have already made these moves. I find that the competitiveness issue has some merit and certainly has merit with some particular industries and situations, but I don't find these numbers to be staggering in view of the total worldwide scene.

So I am sympathetic, because I think they are large numbers, and I think that is a public policy issue, to weigh the costs and benefits, but I am personally not a believer that installing SCR technology will stifle our economic competitiveness.

Mr. **Duncan**. We have had testimony from some of the heads of the utility commissions in States, for example Illinois, who expressed great concern I think as to the costs. I think this is something we need to go into—perhaps with the staff of our Joint Committee on Taxation—because I don't think anyone has gone into the actual costs. If we have already asked the Joint Committee, I have no knowledge of it.

Professor Oates?

Mr. **Oates**. I don't have any direct data on the costs. I would offer one observation on this, though. There have been a number of empirical studies of the costs of pollution control that indicate quite strongly in most cases that the route we have chosen to go is a very expensive route. Having a regulatory authority specify control technologies is expensive, for there is no way an agency can know what the least-cost technique is for a particular polluter. The points the earlier speakers on this panel were making concerning the importance of maintaining flexible choice at the level of the source is very important, and that in itself will promise over time very large cost savings. I am sure that these kinds of cost savings are not factored into the sorts of numbers that we heard discussed this morning.

But the fact that there would be this greater range of choice for polluters must over time be a source of very large cost savings in terms of the studies I am familiar with.

Mr. DUNCAN. Thank you, Mr. Chairman. Thank you, gentlemen.

Mr. DOWNEY. Mr. Dorgan, do you have any questions?

Mr. DORGAN. No.

Mr. DOWNEY. I thank the panel for its testimony.

Next we will hear from Wayne Gresham, Richard Brooks, Taylor Pensoneau, and Christopher Farrand.

Mr. Gresham, we will hear from you first.

STATEMENT OF WAYNE E. GRESHAM, VICE PRESIDENT, LAW AND GOVERNMENTAL AFFAIRS, AMAX COAL CO., REPRESENTING THE AMERICAN MINING CONGRESS

Mr. GRESHAM. Mr. Chairman, members of the committee, thank you for this opportunity to testify before you on H.R. 2497, the Sulfur and Nitrogen Emissions Tax Act of 1987. I am Wayne E. Gresham, vice president, law and governmental affairs for AMAX Coal Co.

AMAX Coal is the Nation's third largest producer of coal. Our company has nine mining operations in four States, employing 3,000 men and women. Last year our mines produced 25 million tons of low-sulfur coal and 11 million tons of high-sulfur coal.

Today I appear on behalf of the American Mining Congress (AMC), a broad-based trade association with more than 400 members, representing the Nation's mining industry, including companies that produce a majority of the country's coal.

AMAX's position and that of AMC on H.R. 2497 is unequivocal: the bill is bad environmental policy, bad energy policy and bad fiscal policy. It should be rejected by this committee.

Although presented as a tax proposal, H.R. 2497 is first and foremost an acid rain bill. Its primary intent is to force further reductions in sulfur and nitrogen oxide emissions principally, if not exclusively, from coal-fired utilities. Accordingly, the bill should be judged first on its environmental merits.

In 1980, Congress made a deliberate judgment that substantive legislation on the acid rain problem was premature until its nature and extent could be reasonably defined. To satisfy this need, Congress mandated the National Acid Precipitation Assessment Program (NAPAP). While not yet complete, this program and other research efforts are now producing results that justify Congress' continuing patience on this issue.

As summarized by the attached acid rain issue profile, prepared by another of AMC's members, Consolidation Coal Co., the emerging environmental picture is reassuring. Contrary to continuing assertions by proponents of acid rain legislation, the best available research on the issue shows that: Acid rain poses no significant threat to public health through drinking water or other pathways.

Sulfur dioxide emissions are declining and the acidity of precipitation is not increasing.

Relatively few of this continent's lakes are acidic, and significant increased acidification of lakes in the Northeast, the area of primary concern, is unlikely over the next 50 years at current levels of deposition.

And there is no scientific proof that acid precipitation has resulted in dead lakes, produced declines in crop or forest productivity, or significantly contributed to damage to buildings, monuments or structures.

In short, no environmental or public health basis justifies a rush to legislation requiring further reductions in sulfur and nitrogen emissions. Those who tell you differently are either ill informed on or unconcerned with the science of the issue.

Coal is the primary energy source for the generation of electricity in this country, and justifiably so.

Domestic supplies of coal are abundant at reasonable costs, with hundreds of years of reserves at current utilization rates. Clearly, the use of domestic coal contributes not only to our energy independence, but also to our balance of trade by reducing the need for foreign oil. The proposed emission tax, however, would be a disincentive to the use of this most reliable and abundant source of domestic energy.

My company has quantified the proposed sulfur and nitrogen tax as it relates to cost of coal valued on a per-ton basis. Our figures confirm those provided to the committee today by the witness for Peabody Holding Co.

The proposed excise tax would increase the cost of coal produced from AMAX's Illinois mines by approximately 70 percent based on average 1987 FOB mine prices. The cost of coal from AMAX's Indiana mines would increase by approximately 180 percent and our compliance with Wyoming coal would suffer a 21 percent increase. One Illinois customer would incur a coal cost increase of 175 percent, and our major Indiana customer would face a 269 percent increase.

Necessarily, taxes of the proposed magnitude must make coal less competitive with other energy sources, including imported oil from the Middle East, as well as with electricity from Canada. Certainly, with respect to oil, Congress long ago concluded that it was in the national interest to reduce dependence on foreign sources. The present volatile situation in the Persian Gulf reaffirms the wisdom of that policy.

Increased importation of Canadian electricity does not have the same national security implications as increased reliance on foreign oil; however, it does raise an issue of fairness, especially in light of that country's position on acid rain.

The Canadian power industry has yet to install a single scrubber on its coal-fired plants despite its government's criticism of the U.S. clean air program. The Canadian Government has an acid rain program in the United States. Yet the United States has spent in excess of $200 billion since 1970 on air pollution control, while

Canadian utilities have enjoyed a virtual nonexistent compliance burden. Nonetheless, electricity generated from such plants in Canada could freely enter the United States displacing domestic sources rendered uneconomic by this emission tax.

Lastly, we object to H.R. 2497 because it ignores today's fiscal reality.

For American industries to compete in this world economy, costs of new tax, environmental and other programs must be kept to an absolute minimum. We simply can no longer afford to ignore such costs on the assumption that they can be borne because they will be passed on by industry to consumers.

Again, thank you for this opportunity to testify.

[The statement of Wayne E. Gresham follows:]

Statement of Wayne E. Gresham, on Behalf of the American Mining Congress

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I

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In 1980, Congress made a deliberate judgment that substantive legislation on the "acid rain problem" was premature until its nature and extent could be reasonably defined. To satisfy this need, Congress mandated the National Acid Precipitation Assessment Program (NAPAP). While not yet complete, this program and other research efforts are now producing results that justify Congress' continuing patience on this issue.

As summarized by the attached acid rain issue profile, prepared by another of AMC's members, Consolidation Coal Company, the emerging environmental picture is reassuring. Contrary to continuing assertions by proponents of acid rain legislation, the best available research on the issue shows that ---

- acid rain poses no significant threat to public health through drinking water or other pathways;
- sulfur dioxide emissions are declining and the acidity of precipitation is not increasing;
- relatively few of this continent's lakes are acidic, and significant increased acidification of lakes in the Northeast, the area of primary concern, is unlikely over the next 50 years at current levels of deposition; and
- there is no scientific proof that acid precipitation has
  - -- resulted in "dead" lakes,
  - -- produced declines in crop or forest productivity, or
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In short, no environmental or public health basis justifies a rush to legislation requiring further reductions in sulfur and nitrogen emissions. Those who tell you differently are either ill-informed on, or unconcerned with, the science of the issue.

II

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The proposed excise tax would increase the cost of coal produced from AMAX's Illinois mines by approximately 70 percent based on average 1987 F.O.B. mine prices. The cost of coal from AMAX's Indiana mines would increase by approximately 180 percent and our compliance Wyoming coal would suffer a 21 percent increase. One Illinois customer would incur a coal cost increase of 175 percent and our major Indiana customer would face a 269 percent increase. AMAX customers alone would pay $424 million a year in excise taxes, including $45 million on compliance coal produced from our Wyoming mines.

Necessarily, taxes of the proposed magnitude must make coal less competitive with other energy sources, including imported oil from the Middle East, as well as with electricity from Canada. Certainly, with respect to oil, Congress long ago concluded that it was in the national interest to reduce dependence on foreign sources. The present volatile situation in the Persian Gulf reaffirms the wisdom of that policy.

Increased importation of Canadian electricity does not have the same national security implications as increased reliance on foreign oil; however, it does raise an issue of fairness, especially in light of that country's position on acid rain.

The Canadian power industry has yet to install a single scrubber on its coal-fired plants despite its government's criticism of the U.S. clean air program. The Canadian government has been one of the strongest advocates in support of the adoption of an acid rain program in the United States. Yet, the United States has spent in excess of $200 billion since 1970 on air pollution control, while Canadian utilities have enjoyed a virtual nonexistent compliance burden. Nonetheless, electricity generated from such plants in Canada could freely enter the United States displacing domestic sources rendered uneconomic by this emission tax.

Furthermore, Canadian power sales are unreliable. Existing power sales agreements provide that the Canadian government can unilaterally cancel any power sale if the power is needed in Canada. Canadian power sales in the United States have increased from a level of 2.4 million megawatt hours in 1970 to a projected level of 74 million megawatt hours in 1995. It is projected that 24 percent of the power to be imported from Canada in 1995 will be delivered to the Midwest.

III

Lastly, we object to H.R. 2497 because it ignores today's fiscal reality.

The economic landscape has changed significantly from that which existed 15 years ago. We in this country must face up to this change, if we are to maintain the prosperity that we have taken for granted since World War II. With increasing speed, the world has become a single global economy in which American industry must compete more vigorously than ever.

For American industries to compete in this world economy, costs of new tax, environmental and other programs must be kept to an absolute minimum. We simply can no longer afford to ignore such costs on the assumption that they can be borne because they will be passed on by industry to consumers.

H.R. 2497 -- like other acid rain bills -- will increase the cost of electricity. As electricity is an important component in most industrial processes, including minerals processing, the bill will tend to make American goods more expensive and, therefore, less competitive. The costs of this lost competitiveness would be a smaller industrial base, reduced employment, higher trade deficits, and, ultimately, lost tax revenues.

The extent of these costs has not been estimated. Those costs, however, should be defined before Congress proceeds with this bill. When they are reliably estimated and weighed against the environmental risks associated with acid rain, you will agree that H.R. 2497 is neither necessary nor prudent.

Again, thank you for this opportunity to testify.

PROFILE ACID RAIN ISSUES

Acid rain became a major public concern in the late 1970s. Americans quickly grouped around two opposing viewpoints, either supporting or opposing a new round of air-quality legislation to "deal with" acid rain. Neither side was able to make a convincing case because the level of scientific understanding was insufficient to accept or reject either position. After several years of intensive data collection, analysis and reporting, science now can answer many of the early questions about the sources, trends and effects of acid rain. The emerging picture is a reassuring one.

Acid Deposition: An Evolving Picture

[illegible]

Acid rain entered the public consciousness in the late 1970s as a clean-air afterthought. The 1970 federal Clean Air Act and its 1977 amendments addressed the immediate problems of elevated pollutant concentrations near emissions sources and provided a framework for continuing air-quality improvements in the future. Acid rain, however, is a phenomenon associated with very low concentrations of acid-forming pollutants dispersed over very large geographic areas. In the late 1970s, some scientists suggested that the cumulative environmental deposition of acidic compounds was causing measurable damage. Moreover, it was asserted, such damage was increasing in both geographic scope and severity.

In response to these concerns, demands were made for drastic reductions in industrial emissions of sulfur and nitrogen oxides. These demands were challenged vigorously by those who objected to the multi-billion-dollar economic costs the proposals entailed. Both sides agreed, however, that little was known about the acid-rain phenomenon, and a substantial government research effort—the National Acid Precipitation Assessment Program (NAPAP)—was mounted by Congress in 1980. In addition, significant research projects were funded by other public and private interests.

Early scientific findings were tentative and conditional, and published reports were cast in very general language. New hypotheses were developed faster than they could be tested. However, a concerned public wanted answers immediately. The hunger for acid-rain information was fed by hundreds of speculative, unscientific assessments. New claims and untested hypotheses were presented to the press as definitive scientific findings. The political aspect of the acid-rain debate became decoupled from the processes of scientific investigation.

Initial acid-rain concerns pertained to fish populations in acidified lakes and streams. Over a period of months, other environmental phenomena were ascribed to acid rain as well. Damage to forests, crops, soils and building materials was estimated and charged almost exclusively to acid rain. These poorly supported contentions of acid-rain damage to the environment became firmly fixed in the public consciousness. Those who questioned these notions could do little more than call attention to the lack of supporting scientific evidence and call for more research.

The situation is quite different today. While there remain many important unknowns about the complex processes that connect air emissions with environmental effects, answers to many significant questions have been provided in recent years by scientific research. The early fears concerning acid rain have been examined and many of the environmental effects and trends associated with acid rain have been reliably characterized. It is time for current understanding to become part of the public record for the sake of sound public policy development.

[illegible]

Contrary to alarming early reports about increases in emissions of sulfur dioxide (SO_2), which is the major acid-rain precursor in most parts of the U.S., more recent data show that SO_2

For further information, contact: [illegible]
Consol Plaza, [illegible]

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emissions have declined substantially since 1973, the peak year. The Environmental Protection Agency (EPA) reports that SO_2 emissions decreased 21 percent between 1976 and 1985. During the same period, concentrations of SO_2 in ambient air decreased 42 percent (EPA 1987). Emissions of SO_2 from coal-fired power plants were down 448,000 tons (2.9 percent) between 1985 and 1986. This drop (from 15.67 million tons in 1985 to 15.22 million tons in 1986) continues the recent trend that showed a 418,000-ton decline from 1980 to 1985 (2.8 percent), despite a 23 percent increase in coal usage by utilities, according to a study by the National Coal Association (NCA 1987). NCA forecasts SO_2 emissions to continue to decline into the 1990s (NCA 1987).

[redacted]

When acid rain first became a concern, it was widely believed that the natural pH (acidity) of precipitation was 5.6 and that carbon dioxide (CO_2) was the only important, naturally occurring acid in precipitation. When higher levels of acidity (lower pH values) were detected, it was assumed that they were caused by emissions of SO_2 and oxides of nitrogen (NO_x).

However, it is now known that the pH of "unpolluted" rainfall can vary naturally over a range of 4.5 to 6.5 (EPA 1985; National Academy of Sciences 1986), with much of the variation due to changes in the level of sulfur in the biosphere from natural factors (such as decay and decomposition) and the chemical makeup of naturally occurring dust (Charlson and Rodhe 1982). In the eastern United States, the pH of "natural" rain is about 5.0, meaning that the increase in acidity caused by manmade sources is not even remotely equal to a factor of 100 or 1000, as some accounts have claimed.

Likewise, early fears that precipitation was becoming more acid and was affecting an ever-expanding area appear to have been unfounded. Data collected since the mid-1960s suggest that precipitation acidity has changed little—or perhaps even declined slightly—in the Northeast over the last 20 years and that the pattern of acidity has remained essentially the same since 1978 (Interagency Task Force on Acid Precipitation 1985).

[redacted]

The nature of the link between emission sources and acid deposition is a subject of genuine scientific debate. One school of thought has held that the relationship is linear, i.e., a given increase or decrease in emissions results in the same percent increase or decrease in deposition.

It is becoming increasingly clear that linearity is too simple an assumption to explain the facts. Research into the complicated chemistry of the atmosphere indicates that the processes whereby SO_2 is converted to acidic sulfate compounds are nonlinear and involve other pollutants and potential limiting agents as well as atmospheric conditions (Hidy et al. 1984; Saxena and Seigneur 1986). For the Northeast, it has been calculated that a "...50 percent reduction in local ambient SO_2 concentrations would yield . . . 20 percent reductions in sulfate levels for the . . . northeast subregion ...." (Saxena and Seigneur 1986, p. 1152).

Likewise, the movement and dispersion of pollutants between their sources and sites of deposition are still not completely understood. Dispersion patterns are complex and quite variable over space and time and deposition at any given location reflects conditions at both local and distant sources. The relative importance of different emission sources to specific receptor sites cannot be determined at this time (Natl. Acad. Sci. 1986). This makes it impossible to predict the specific deposition effect of controls on a given emission source or source area with any acceptable degree of confidence.

[redacted]

Contrary to the generally overstated early reports that thousands (or tens of thousands) of lakes had become acidified because of acid rain, research indicates that relatively few lakes are acidic (less than four percent of northeastern lakes have a pH of 5.0 or lower, according to a recent EPA survey) and that causes other than acid rain are often involved (Linthurst et al. 1986; Thomas 1986). Many of these lakes are naturally acidic and appear to have been so for hundreds of years or more (Natl. Acad. Sci. 1986). Others appear to have acidified more recently. Comparison of histori-

ABOUT THIS PROFILE

Acid rain stimulates both concern and intense debate, yet only recently has sound scientific evidence become available on the complex causes and effects of acid deposition. Research continues into the many uncertainties that remain.

As a major coal producer, Consolidation Coal Company has a direct interest in the acid rain issue. Legislative proposals that do not carefully consider its complexities, including social and economic aspects, can needlessly harm existing coal markets. Consol publishes the PROFILES series, based on topical scientific and economic sources, to help clarify current understanding of this issue and promote sound public policy.

We welcome your comments. Company representatives are available to discuss any subject addressed in this series.

cal measurements (from the 1930s to the 1950s) of pH and alkalinity (an indicator of resistance to acidification) with more recent data from lakes in New York and New Hampshire suggests that the acidity of most of these lakes has remained stable (Kramer 1986).

Recent surface-water acidification data and current modeling techniques used to interpret them suggest that, in the Northeast, significant additional acidification is unlikely at current levels of deposition (EPA 1985; Thomas 1986; Turner et al. 1987).

FISH AND OTHER AQUATIC LIFE

It was reports of the decline of fish populations in hundreds of thousands of lakes and streams that first stimulated concern about acid rain. The initial estimates have turned out to be too high, although the exact extent of the fish loss is uncertain at present. The number of documented fishery declines that can be attributed to acid deposition and acidification is relatively small (Haines and Baker 1986; Natl. Acad. Sci. 1986). A lack of historical data on fish populations and the difficulty of assessing the influence of other causes of declines (such as the introduction of competing species or increases in fishing pressure) make it unlikely that this issue will ever be resolved.

Moreover, equally widespread claims that surface-water acidification was causing wholesale extinction of other aquatic life are not true. The experimental acidification of a test lake in Ontario caused no measurable decline in primary productivity, algal biomass, decomposition rates or nutrient levels (Schindler et al. 1985). Current levels of acid deposition appear to have little or no effect on major biological processes (Altshuller and Linthurst 1984). Acidification does not result in "dead" lakes and streams, although it is one of a number of environmental factors that can result in shifts in species composition.

[redacted]

Initial fears were voiced about the productivity of forests and cropland based on assumed effects of acid rain on soil acidity, fertility and rates of decomposition and nutrient cycling. Subsequent research has failed to support these hypotheses. For most soils, acid deposition causes no measurable changes in soil acidity or in the pool of available nutrients. It is unlikely that current rates of acid deposition will lead to decreases in soil microbial activity (EPA 1985).

The basis for thinking that crops might be at risk was early acid-rain simulation experiments in laboratories and greenhouses. The experiments produced some observable effects but generally only at levels of acidity far higher than current wet-deposition levels. More recent research suggests that current levels of acid precipitation have little or no effect on crop yield or value (Irving 1983; Interagency Task Force on Acid Precipitation 1985).

Forests have most recently been a matter of concern because of reports of widespread damage to forests in Europe and observations made in 1982 and 1983 of declines in spruce and fir in high-elevation areas of New England and the southern Appalachians. Acid deposition was suggested as the cause and new research programs were launched on both sides of the Atlantic to investigate the matter. In the U.S., research has begun to yield preliminary results pointing to natural factors—particularly climatic changes, possibly exacerbated by pollutants other than acid rain—as the likely causes (Johnson et al. 1986; Natl. Acad. Sci. 1986). It also appears, based on new data, that original estimates of the extent of forest decline were too high. Spruce decline has been shown to be restricted to limited areas of high-altitude, noncommercial forest, while fir "decline" has been shown to be a cyclical, natural phenomenon resulting from stand age and insect damage. In fact, recent research at several high-elevation sites in the Northeast suggest that the decline of red spruce is over (Johnson 1987).

[redacted]

Despite allegations that acid precipitation is responsible for up to $13 billion per year in damage to buildings, monuments and other manmade structures in the United States, no specific link has been demonstrated. Any effects due to acid precipitation are superimposed upon damage caused by numerous natural phenomena (such as moisture and sunlight) and by other pollutants. Natural forces may account for most of the damage in most places (Yocom 1985). Where faster-than-normal corrosion of materials appears to be related to manmade pollutants, the problem is largely confined to areas close to pollution sources (Kucera 1986).

[redacted]

Early fears that acidification of surface and ground waters would lead to increased concentrations of metals in public drinking-water supplies and a subsequent threat to human health may be unfounded. Current research has failed to establish any causal linkage between acid deposition and increased health risks or treatment costs for public water supplies. Analyses of historical data on water quality for several major reservoirs have detected no measurable increases in corrosivity indices over time (Taylor and Symons 1984). Major literature reviews have concluded that no effects on human health have been shown (EPA 1985; Goyer et al. 1985; McDonald 1985).

THE [redacted]

Despite concerns, currently available evidence suggests that acid precipitation has had no effect on surface waters, forests or wildlife in the western United States. Assessments of the historical pH levels of lakes in the Rocky Mountains show no signs of acidification (Natl. Acad. Sci. 1986) and the acidity of the precipitation itself appears generally to be within the normal range (Hidy 1985). There are no indications of regional acidification (Landers et al. 1987). In fact, a major environmental organization has conceded that recent reductions in SO_2 emissions "should avert any major regional threat of acid-rain damage to high-country watersheds" (Yuhnke 1987).

[illegible]

The groundswell of concern over acid rain that arose in the late 1970s prompted the funding of a number of research projects, the results of which have begun to replace speculation with sound scientific conclusions. Genuine fears that acid rain would have serious and far-ranging effects on human health and the environment have not been borne out by the research. Although uncertainties remain, it appears that the extent and rate of damage were grossly overstated.

Research into all aspects of acid-deposition phenomena continues, with final results expected from several projects by the end of the decade. As was their purpose from the beginning, these projects will make possible informed and sensible policy decisions. In particular, the need (if any) for additional controls on emissions, and their nature, will become clearer. For the moment, it is reassuring to know that SO_2 emissions are continuing to decrease—absent new legislation—and that the problem of acid deposition, while deserving careful attention and study, does not appear to pose the grave threats that were once feared

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Mr. DOWNEY. Mr. Brooks.

STATEMENT OF RICHARD J. BROOKS, PRESIDENT AND CHIEF OPERATING OFFICER, FREEMAN UNITED COAL MINING CO., ON BEHALF OF THE NATIONAL COAL ASSOCIATION.

Mr. BROOKS. Thank you, Mr. Chairman.

My name is Richard J. Brooks. I am president and chief operating officer, Freeman United Coal Mining Co., Chicago, Ill. I am here today representing the National Coal Association, an organization which represents producers of coal from the smallest to the largest, operating in all producing regions of the country and mining all qualities of coal. NCA member operations comprise the majority of the commercial coal production in the United States.

We appreciate the opportunity to present our views in opposition to H.R. 2497, the Sulfur and Nitrogen Emissions Tax Act of 1987.

If enacted, this proposal would impose significant costs on electric utilities and their customers, with the greatest cost impact on those fixed-income individuals, regions and industries least able to afford it. The ability of much of the U.S. basic industries to compete in either domestic or world markets would be impaired, and the increased cost to American industries would tend to encourage a greater level of imports. Development and deployment of new or more efficient combustion technologies designed to improve emissions control would be slowed due to lack of funds. This Nation's ability to achieve the vital goals of energy security and independence would be sharply curtailed.

H.R. 2497 was not introduced as a revenue-raising measure, in the words of its sponsor, Representative Gregg, it is an acid rain bill and should be considered in that context. As other acid rain proposals, H.R. 2497 attempts to reduce emissions at a rate faster than already being accomplished under the Clean Air Act. Mr. Gregg's statement implies the Clean Air Act, as amended, is not effective. This is an erroneous view of the efficacy of the Clean Air Act and of the trend in SO_2 emissions.

NCA has conducted a series of analyses that show SO_2 emissions from coal-fired powerplants declined by nearly 3 percent from 1980 to 1985, while coal consumption increased some 23 percent, or by 125 million tons. This decline in emissions accelerated in 1986. NCA's study is summarized in the appendix attached.

As important, the reduction of SO_2 emissions since 1980 has not been evenly distributed throughout the country. The regions of most concern to the Canadians, the border regions from North Dakota east along the Canadian border, have shown a much greater decline in emissions than the Nation as a whole.

The utility industry has estimated full implementation of H.R. 2497 would result in the imposition of an annual tax on the electricity/utility industry in excess of $16 billion, given the generation and fuel use patterns of 1985. This would be an annual cost in addition to the $10 billion that EPA estimates utilities are now spending each year to meet the requirement of the Clean Air Act.

This tax will affect every utility in every State and ultimately every electric utility customer. Although the economic consequences are clearly disproportionate on a regional basis, the bias is toward those regions heavily dependent upon gas, nuclear power and hydropower, and is unfavorable to those regions dependent upon coal.

As this tax is on emissions or on electricity generated within the United States, consumers in States that could become more dependent upon imported Canadian electricity would be less affected than those dependent on electricity generated domestically.

NCA found that the tax—levied on SO_2 only—would increase average electricity costs per kilowatt hour by 3.6 percent in the New England region, 6.3 percent in the Middle Atlantic States, 17.8 percent in the industrial East North Central region, 11 percent in West North Central, 8.2 percent in the South Atlantic region, 16 percent in the East South Central area, but less than 1 percent in all other census regions—the Mountain, Pacific, and West South Central States.

The disproportionate effects on industrial electric costs are astounding. In the industrialized East North Central region, the cost of electricity to the utilities' industrial customer would have been 23 percent higher in 1985 had this tax on SO_2 emissions been in effect. In Ohio, Indiana, Missouri, Georgia, West Virginia, and Kentucky industrial bills would have been over 20-percent higher. Industrial electricity would have been from 10- to 20-percent higher in New Hampshire, Pennsylvania, Illinois, Wisconsin, Iowa, Maryland, Tennessee, and Alabama. All of these States are home to industries for which energy costs are a significant portion of total costs and which would have to consider relocating outside the country to remain competitive were this tax to be imposed.

It must be noted that the manufacturing in the East North Central region States is 24 percent of the value of all manufacturing in the United States and that 36 percent of all manufacturing is located in States that would experience a 15 percent or more increase in electricity costs.

Industries in these States would be at a decided disadvantage in competing for markets in the United States, both with industries in States less affected by this proposed tax and with foreign competition. All U.S. industry, which would be affected in some way by this tax, would be at a further disadvantage when competing in world markets.

It is ironic that this committee, which has worked long and hard to produce a trade bill intended to increase the competitiveness of the United States abroad, is now considering legislation that will unnecessarily increase the cost of doing business, decrease U.S. industries' competitiveness in the world market, and encourage imports.

Thank you, Mr. Chairman. I ask that my full statement be submitted for the record.detectors

Mr. Downey. Without objection, so ordered.

[The statement of Richard J. Brooks follows:]

STATEMENT OF
RICHARD J. BROOKS
on Behalf of the National Coal Association

on

H.R. 2497
"The Sulfur and Nitrogen Emissions Tax Act of 1987"
House Ways and Means Committee

September 9, 1987

Mr. Chairman, my name is Richard J. Brooks. I am President and Chief Operating Officer, Freeman United Coal Mining Company, Chicago, Illinois. I am here today representing the National Coal Association, an organization which represents producers of coal from the smallest to the largest, operating in all producing regions of the country and mining all qualities of coal. NCA member operations comprise the majority of the commercial coal production in the United States.

We appreciate the opportunity to present our views in opposition to the legislation now pending before the committee, H.R.2497, "The Sulfur and Nitrogen Emissions Tax Act of 1987."

If enacted, this proposal would impose significant costs on electric utilities and their customers which would have far reaching and negative economic consequences. The costs of this legislation would have the greatest impact on those individuals, regions and industries least able to afford it. H.R.2497 would impair the ability of much of U.S. basic industry to compete in either domestic or world markets and would tend to encourage a greater level of imports. The costs imposed by H.R.2497 on electric utilities and industrial fuel users would slow development and deployment of new, more efficient combustion technologies designed to improve emission control. This nation's ability to achieve the vital goals of energy security and independence would be sharply curtailed.

Consideration of H.R. 2497 as a means to raise revenue to reduce the deficit is self defeating on its face. If the proposal would be successful, as an acid rain bill in reducing emissions, it would cease to provide revenues. Irrespective, when viewed in conjunction with the companion bill, H.R. 2498, revenues raised would be utilized through a dedicated trust fund for specifically designated purposes. This would not reduce the annual deficit.

H.R. 2497 was not introduced as a revenue raising measure. In the words of its sponsor, Representative Judd Gregg (R-NH), H.R. 2497 is an acid rain bill. As such it seeks to impose additional costs upon utilities, industrial fuel users and their customers in an attempt to reduce emissions at a rate that is faster than already being accomplished under the Clear Air Act. We believe that this and other relevant committees should consider H.R. 2497 in that context.

H.R.2497 IS AN ACID RAIN BILL

The "Sulfur and Nitrogen Emissions Tax Act, 1987" would levy an excise tax on the SO_2 and NO_x emissions of fossil fuel-fired utilities and industrial boilers. The tax would be levied on emissions from all boilers with a heat input rate of more than 100 MMBTU per hour. The only exceptions are those boilers of more than 100 MMBTU per hour but less than 250 MMBTU per hour, if their emission rates of either SO_2 or NO_x do not exceed 1.2 lbs per MMBTU . The tax is progressive at the following rates:

SO_2 emissions: 15¢/lb for 0.6 to 1.2 lbs/MMBTU
30¢/lb for 1.2 to 2.0 lbs/MMBTU
45¢/lb for over 2.0 lbs/MMBTU

NO_x emissions: 10¢/lb for 0.4 to 0.7 lbs/MMBTU
25¢/lb for 0.7 to 1.4 lbs/MMBTU
45¢/lb for over 1.4 lbs/MMBTU

The tax would be calculated on the basis of data collected from a continuous monitoring device which must be installed, before the end of 1988, on each stack at each industrial plant or electric utility that uses fossil fuel - coal, oil or natural gas. The utility or industrial plant can elect to base the tax on an analysis of the fuel used in the boiler. In this case the tax rate would be 50¢/lb.

The tax receipts would be put in a trust fund to provide monies necessary for the administration of the fund and for loans to utilities or industrial companies for the purpose of installation of pollution control equipment. Under very limited, and strictly defined, detailed in a companion bill H.R. 2498, which amends the Clean Air Act, loans at reduced interest rates would be made available for a portion of the capital costs associated with construction of pollution control equipment in new plants intended to replace capacity that is being retired and that exceeds defined emission levels.

The tax would be phased in, 25 percent in 1989, 50 percent in 1990 and 100 percent in 1991. Limited loan funds would be available from the trust fund in the early years of operation, as the fund has the authority to borrow only $2 billion per year from the Federal Treasury in 1988, 89 and 90 with all borrowing to be repaid by the end of 1990.

AN ACID RAIN BILL IS NOT NEEDED

Representative Gregg said when introducing H.R. 2497 and its companion H.R. 2498, that these two legislative proposals are designed to "address the issue of acid rain." Mr. Gregg's statement implies that the Clean Air Act as amended is not effective. This is not the case and we would submit that there is no need for additional legislation to address this issue.

Over the past six years we have learned that acid deposition is not the exclusive culprit for the alleged ecological distress experienced in several sensitive regions; sulfur dioxide emissions continue to decline under existing provisions of the law -- with the majority of the decline occurring in the industrialized states of most concern to those in Canada and the Northeastern states of the U.S. (see Appendix 1).

H.R. 2497 appears to be motivated, at least in part, by a perception that the Clean Air Act is not working; and that absent additional controls such as those that this legislation would attempt to force, emissions of SO_2 will rise. This is an erroneous view of the efficacy of the Clean Air Act and of the trend in SO_2 emissions as the study summarized in Appendix One shows.

The additional costs associated with any proposed control programs that go beyond the requirements of existing law (and H.R. 2497 is a control program disguised as a tax) and the resultant economic disruptions caused by these costs will be significant. There is simply no empirical basis to assume that the enormous investments which would be required of both public utilities and private industry, investments that would be in existing technology and in addition to those already being made, would result in any significant amelioration of the problems sought to be addressed.

As the Department of Energy recently concluded, "If further emission reductions are to be achieved without incurring great costs or dislocations, innovative technologies will be needed that are less sensitive to fuel type and that can retain acceptable economics over a wide range of boiler sizes and types. Many of the new technologies also offer the advantage of significant NO_x control, something that the conventional SO_2 control options can't achieve." Imposition of this tax would certainly slow development of these new, and more effective, technologies.

The standards this legislation seeks to require, albeit indirectly, are in excess of those required to achieve the New Source Performance Standards for both SO_2 and NO_x. To completely offset the effects of this tax, an SO_2 reduction equivalent on a national basis to 12 million tons from 1980 levels would have to be achieved. This will be costly, estimates range upward from an annual $7 billion per year, and will have little effect on the localized and limited instances of ecological distress which are the supposed beneficiaries of this, or other legislation proposed to "control" acid rain.

THE ECONOMIC EFFECTS OF H.R. 2497

The utility industry has estimated that full implementation of H.R. 2497 would result in the imposition of an annual tax on the electric utility industry in excess of $16 billion, given the generation and fuel use patterns of 1985. This would be an annual cost in addition to the $10 billion that EPA estimates utilities are now spending each year to meet the requirement of the Clean Air Act. The tax represents almost eleven percent of the total 1985 revenue of the utility industry. The tax plus current expenditures represent over 17 percent of utility revenues.

The tax on industrial fuel users, which cannot be estimated, would push the total costs of H.R. 2497 to American industry and American consumers to even higher levels.

Although the effects of the tax on residential, commercial and industrial customers will vary significantly throughout the United States, it can be assumed that the utility will pass the costs through directly to the consumer. On a national basis estimates show that, at 1985 rates, the SO_2 and NO_x tax would add an average 0.66 cents to the cost of each KWH generated in the United States. This is equivalent to 13 percent of the average cost of electricity to industrial customers and 9 percent of the cost of a KWH to a residential or commercial customer.

This tax will effect every utility in every state and, ultimately, every electric utility customer although the economic consequences are clearly disproportionate on a regional basis. The bias is towards those regions that are heavily dependent on gas, nuclear power and hydro power and is unfavorable to those regions that are dependent on coal.

The disparate effects of the tax can be illustrated by a few examples. In Ohio and Indiana (where 98 and 99 percent respectively of the electricity is generated by coal) the cost of a KWH would increase by 2.0¢ or by over 35 percent in each case. In New Hampshire, (61 percent dependent on coal and 22 percent on oil) the average increase would be 1.4¢/KWH, or 20 percent. Conversely, in California, (dependent on natural gas and hydro power) costs for electricity generated within the state would increase by 0.02¢/KWH or by less than one-half of one percent.

As this tax is on emissions, or on electricity generated within the U.S., consumers in states that could become more dependent on imported (Canadian) electricity would be less affected than those dependent on electricity generated domestically. H.R. 2497 would immediately encourage greater use of imported electricity.

NCA analyzed the costs of the tax on SO_2 emissions from utility plants of greater than 50 MW in size only and found that, given 1985 fuel use and generation patterns, the tax due to SO_2 alone would have been in excess of $12.4 billion. As discussed above, addition of a tax on NO_x and the addition of the amounts due from industrial users (for which insufficient data are available to estimate direct economic effects) would bring the total much higher. (The tax estimates cited by NCA differ slightly from those quoted by the utility industry due to different assumptions used.)

NCA found that the tax (levied on SO_2 only) would increase average electricity costs per KWH by 3.6 percent in the New England region, 6.3 percent in the Middle Atlantic states, 17.8 percent in the industrial East North Central region, 11 percent in the West North Central, 8.2 percent in the South Atlantic region, 16 percent in the East South Central area, but less that 1 percent in all other census regions - the Mountain, Pacific and West South Central States.

The disproportionate effects on industrial electric costs are astounding. In the industrialized East North Central region, the cost of electricity to the utilities' industrial customer would have been 23 percent higher in 1985 had this tax on SO_2 emissions been in effect. In Ohio, Indiana, Missouri, Georgia, West Virginia, and Kentucky industrial bills would have been over 20 percent higher. Industrial electricity would have been from 10 to 20 percent higher in New Hampshire, Pennsylvania, Illinois, Wisconsin, Iowa, Maryland, Tennessee and Alabama. All of these states are home to industries for which energy costs are a significant portion of total costs and which would have to consider relocating outside the country to remain competitive were this tax to be imposed.

It must be noted that the manufacturing in the East North Central region states is 24 percent of the value of all manufacturing in the United States and that 36 percent of all manufacturing is located in states that would experience a 15 percent or more increase in electricity costs.

Industries in these states would be at a decided disadvantage in competing for markets in the U.S., both with industries in states less affected by this proposed tax and with foreign competition. All U.S. industry, which would be affected in some way by this tax, would be at a further disadvantage when competing in world markets.

It is ironic that this committee, which has worked long and hard to produce a trade bill intended to increase the competitiveness of the United States abroad, is now considering legislation that will unnecessarily increase the cost of doing business, decrease U.S. industries' competitiveness in the world market and encourage imports.

SUMMARY

The proponents of this tax make the point that the costs to the consumer can be reduced by reducing emissions. This is not accurate. Significantly higher costs for additional equipment, for fuel switching -- to oil or gas -- or for imported energy would be necessary thereby increasing not reducing, costs to the consumer. Thus costs of energy will increase, either due to a tax levy or due to additional expenditures for emission controls above those that are now being incurred. And, both costs will occur simultaneously.

There is simply no need for these additional costs. SO_2 emissions are already lower than in 1980 and the trend is downward, not upward. Further reductions in emissions will occur under the existing Clean Air Act and will occur most efficiently and most cost effectively through development and deployment of innovative technologies.

Imposition of this tax would require utilities to act quickly. The forced near term expenditures on equipment that is available today, would delay development and commercial implementation of more efficient technologies such as those being developed under the Clean Coal Technology program.

This tax would be imposed at the same time that utilities and industries would be attempting to raise the funds necessary to install emission control equipment (or to upgrade existing equipment). The funds available from the trust fund would not be sufficient to cover all costs for several years. Finally, the need for expenditures for costly equipment on boilers that are old or utilized on a minimal basis is questionable.

The best way for utilities and industrial fuel users to quickly reduce or eliminate the effects of this tax would be, wherever possible, to switch to oil (imported) or natural gas, or to use imported energy such as electricity generated in Canada to ameliorate the effects of this proposed tax. Total coal use at utilities and at industrial plants would decline. A reduction in coal use is clearly not in the best interests of long run energy security and energy independence.

There is nothing to indicate that the proposed tax would effectively achieve a faster rate of emissions reductions than can be expected under the current Clean Air Act. Nor is their indication that this tax would be more effective than other acid rain control proposals, of which this is but a new variant. Everything indicates that the tax would result in increased costs, a reduction in competitiveness of U.S. industry and an increase in dependence on oil and imported power.

APPENDIX

REDUCTION IN SULFUR DIOXIDE EMISSIONS AT COAL FIRED ELECTRIC UTILITIES [1]

Forecasts of rising SO_2 emissions in conjunction with calls for additional legislative controls on SO_2 emissions have characterized the acid rain debate over the past eight years. By 1980 it was evident that SO_2 emissions from coal-fired power plants were not going to be double the 1970 level, as suggested by some and it was evident that total SO_2 emissions had fallen substantially despite rising coal use. Despite this evidence forecasts, although adjusted downward, continue to show rising SO_2 emissions. The argument was advanced that they would rise in the 1980's because of the large anticipated increase in coal use and because of the expectation that with most plants in compliance with respect to sulfur dioxide by 1980, no further reduction of SO_2 emissions could be expected to result under the Clean Air Act absent additional controls.

In 1986, National Coal Association conducted a detailed analysis and study of SO_2 emissions from coal-fired power plants from 1980 to 1985. Contrary to the forecasts of rising emissions, that study found that SO_2 emissions from coal-fired power plants had continued to decline. Specifically, between 1980 and 1985, while the national experienced a significant increase in coal use -- in 1985, electric utilities consumed 23 percent (125 million tons) more coal than they did in 1980 -- emissions of SO_2 from coal-fired power plants actually declined by nearly 3 percent. The actual level of SO_2 emissions from coal-fired power plants in 1985 was 10 percent below the EPA projection for 1985 and, more significantly, below the 1980 level of emissions. EPA later verified these findings.

A 1987 update of NCA's earlier analysis showed that SO_2 emissions from coal-fired utilities continued their decline in 1986, and that this one year decline was greater than the total SO_2 emissions decline experienced from 1980 through 1985. The magnitude of the 1986 decline reflects the combined effect of a small, 1.2 percent, reduction in utility coal consumption coupled with the continuing decline in SO_2 emissions.

It should be noted that nearly 65 percent of the decline in SO_2 emissions at power plants since 1980 has occurred in plants that were operating in 1980 and subject to State Implementation laws, not the New Source Performance Standards. They are the same plants from which, it was assumed, that once in compliance no further reduction could be expected. Experience has proved that this assumption is incorrect.

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[1] This appendix has been adapted from the NCA report "Reduction in Sulfur Dioxide at Coal-Fired Electric Utilities - The Trend Continues", April, 1987.

Had SO_2 emission rates not declined between 1980 and 1986, total SO_2 emission would have risen to nearly 20 million tons based on increase coal use. Instead, while coal use increased by 22 percent of 121 million tons, SO_2 emissions declined by almost 6 percent or by almost 1 million tons over this six year period. The causes of the decline in SO_2 emissions from coal fired power plants, which were not expected by the supporters of the 1977 Clean Air Act Amendments, can be attributed to four distinct causes:

- The NSPS effect: the result of the emissions limit imposed on new plants that is more stringent than that for existing plants;

- The Demand shift: the result chiefly of the movement of economic activity and electricity demand to regions which use lower sulfur coals;
- The Sulfur effect: the result of substituting lower sulfur coals in power plants throughout the country; and

- The Scrubber effect: the result of retrofitting new technology, in this case, scrubbers onto plants not subject to the new source performance standards.

When NCA first attempted to analyze trends in SO_2 emissions from coal-fired power plants, based on 1984 data, we concluded that emissions in 1990 would be lower in 1990 than in 1980. We reached this conclusion based on the expectations that the trends established between 1980 and 1984 would continue. After considering 1985 and 1986 experience, we are more confident in our conclusions. 1990 emissions will be lower than emissions in 1980 without legislation which would indirectly or directly mandate stricter controls.

It should be pointed out that National Coal Association's views of future trends are not yet shared by the EPA. EPA's latest interim base case forecast has recognized what is now history with respect to 1985 and the forecast for 1990 has been reduced. However, EPA persists in anticipating a rather sharp increase in SO_2 emissions in the late 1980's even though growth in coal demand by electric utilities will be marginal.

The argument with respect to SO_2 emissions from coal-fired power plants is now most properly discussed with respect to the post 1990 period. We have not extended our projections into the 1990's, not because we fear the results, but out of respect for the uncertainties involved in any such prediction. However, based on the experience to date, we believe that the constantly revised projections of rising SO_2 emission must be greatly discounted. Although not stated as such, they are, at best, worst-case projections, which are consistent only in ignoring the potential for things not to turn out as badly as we feared they might.

With respect to sulfur dioxide emissions from coal-fired power plants in the 1990's the following should be noted:

-The Clean Air Act will continue in effect, and particularly those provisions of the 1977 Amendments such the PSD requirements will keep emissions from rising to levels otherwise permitted by National Ambient Air Quality Standards;

- Emerging New Technologies of coal combustion and sulfur control will achieve, in conjunction with the Clean Air Act, even lower average emission rates with greater efficiency; and

- Coal is not guaranteed the next increment of generating capacity in either utilities or in industry. This is as a result or the recent repeal of the Fuel Use Act coupled with the expectation that oil and gas prices will continue to be lower that what was expected before 1986 and, therefore, used in greater quantities by utilities. Also, coal could be displaced by an increase in Canadian power imports.

The reduction of SO_2 emissions since 1980 has not been evenly distributed throughout the country. Canadians have expressed great concern about the effects of SO_2 emissions from the United States. The regions of most concern to Canada, the "Border" regions from North Dakota east along the Canadian border to Maine, have shown a much greater decline in emissions since 1980 than the nation as a whole. In fact, the entire reduction in SO_2 emissions has occurred in the regions adjacent to Canada. While emissions in the U.S. declined by 866 thousand tons from 1980 to 1986, emissions in the Northeast, East North Central and West North Central regions declined by 880 thousand tons.

Mr. **Downey**. Mr. Pensoneau.

STATEMENT OF TAYLOR PENSONEAU, VICE PRESIDENT, ILLINOIS COAL ASSOCIATION

Mr. **Pensoneau**. Thank you.

My name is Taylor Pensoneau. I am the vice president of the Illinois Coal Association, the trade organization representing coal companies operating in Illinois. The ICA appreciates this opportunity to be heard here today.

According to a preliminary assessment, the proposed levy would trigger or produce nearly $1 billion annually in new tax revenue from utilities in just my state alone. Furthermore, most of those dollars would come from utilities burning Illinois coal. Moreover, since about two-thirds of Illinois coal production is exported to utilities in other Midwest and Southeastern States, more billions of the dollars to be raised by this tax also would come from utilities now burning Illinois coal.

The upshot would be further soaring of utility bills, increased erosion of the market for coal from the Illinois Coal Basin, a crippling of the growing clean coal technology development program, and, speaking for my part of the country, even greater economic havoc in the already-depressed regions of downstate Illinois tied to the coal industry.

More detail is provided later in this statement on the cooperation in Illinois between State government, universities, industries and the coal industry itself to utilize higher sulfur Illinois coal, or rather a lot more of it, in conformance with Federal and State air quality regulations.

However, the positive scenario we are working to build in Illinois would be undercut sharply by the negative impact of measures such as H.R. 2497. That is our basic argument, our obvious concern.

Even without the added burden of legislation like H.R. 2497, the Illinois coal industry has its back against the wall. Largely because of the already great difficulties in marketing much of our coal, at least five major mines have closed so far this year in Illinois. Chances are strong that another three will be closed by the end of the year, to put this in perspective. Really, the statistic most depressing in terms of public morale in my State is the unemployment figure for coal miners. It now numbers 6,000, roughly one-third of the active work force of men and women miners in Illinois. The economic despair of this situation goes far beyond these individuals and their families, judging by the empty storefronts now dominating the main streets of many communities in coal-producing areas of downstate Illinois.

To back up this very bleak picture I have outlined, I would refer you to the business section of last Sunday's St. Louis Post Dispatch. The main story is headlined "Illinois Mines Face Dark Days." Again, we obviously cannot afford any further erosion of our markets. Yet based on a preliminary analysis of H.R. 2497 by the Southern Illinois University Coal Research Center, projected Illinois coal production by 1995 should be 74 million tons a year without the passage of this bill or any other acid rain control legislation.

However, with just H.R. 2497 alone in effect, SIU projects our annual production could fall to 57 million tons by 1995, a reduction of over 25 percent, based on utilities implementing a variety of expected strategies in an effort to minimize costs under the bill.

Now moving quickly to another point, Illinois coal use by industries other than utilities has been growing, but that trend would be threatened by the outcry in the State against H.R. 2497.

For example, take the A.E. Staley Manufacturing Co., one of the Nation's largest corn refiners. Staley currently is constructing a new coal-fired boiler facility at its headquarters in Decatur, Ill., that employs state-of-the-art fluidized bed boiler technology. The project is intended to permit a big increase in Illinois coal usage by Staley—up to 510,000 tons of high-sulfur Illinois coal per year. However, Staley's tax bill for this new installation under H.R. 2497 would be nearly $3.5 million a year, even though emissions from the project will satisfy EPA standards. Thus, this added tax, Staley officials feel, will make Staley and other industrial operations in Illinois less competitive and, in addition, undercut incentives for increasing the use of Illinois coal.

Likewise, Illinois utilities are arguing that the taxes levied by H.R. 2497 will eliminate the incentive or the option, so to speak, to develop clean coal technologies. Illinois Power Co., a major user of our coal, believes that the proposed levies would become effective so soon that it would not be feasible to continue the development and implementation of such technologies. Also, Illinois Power officials believe that the projected sulfur dioxide control capabilities of these technologies are not extensive enough to reduce emissions from the burning of high-sulfur Midwestern coal to below 0.6 #SO_2/MBtu so as in order to avoid the taxes.

In summary, I want to reiterate the belief of the Illinois coal industry the Nation is heading toward resolution of the acid rain controversy through reasonable and rational development of clean coal technologies at both the Federal and State levels, interruption of this positive movement should not be permitted by unnecessary proposals, such as H.R. 2497.

Thank you.

Mr. Downey. Thank you.

[The statement of Taylor Pensoneau follows:]

Statement of Taylor Pensoneau

Vice President of the Illinois Coal Association

Members of the Committee, my name is Taylor Pensoneau. I am the vice president of the Illinois Coal Association, the trade organization representing coal companies operating in Illinois. The ICA appreciates this opportunity to be heard here today.

The coal industry in Illinois strongly opposes H.R. 2497, which would impose a new tax on sulfur dioxide and nitrogen oxide emissions across the country.

According to a preliminary assessment, the proposed levy would trigger or produce nearly $1 billion annually in new tax revenue from utilities in just my state alone. Furthermore, most of those dollars would come from utilities burning Illinois coal. Moreover, since about two-thirds of Illinois coal production is exported to utilities in other Midwest and southeastern states, more billions of the dollars to be raised by this tax also would come from utilities now burning Illinois coal.

The upshot would be further soaring of utility bills, increased erosion of the market for coal from the Illinois Coal Basin, a crippling of the growing clean coal technology development program and, speaking for my part of the country, even greater economic havoc in the already-depressed regions of downstate Illinois tied to the coal industry.

In terms of financial impact, H.R. 2497 appears to be the most costly to consumers of the various legislative proposals before Congress in the 1980s on the acid rain issue. And, ironically, this measure is being pushed at a time when virtually all of the latest research reports and documented data show that the acid rain issue is hardly the crisis depicted by environmental lobbyists.

I am referring to a numter of developments this year, such as the report earlier in 1987 by the United States Environmental Protection Agency that the nation's air quality was improving and that pollution was declining significantly under the Federal Clean Air Act. Specifically, the EPA noted that sulfur dioxide emissions alone decreased 21 percent between 1976 and 1985. Other research -- such as that being conducted by the Congressionally-mandated National Acid Precipitation Assessment Program -- is showing, for instance, that the very genuine fears that acid rain would have serious and far ranging effects on human health and the environment are not being borne out by the research. Although uncertainties obviously remain, it is appearing more and more that the extent and rate of damage has been grossly exaggerated.

It is important to add here that emissions of sulfur dioxide, and nitrogen oxides, too, will continue to decrease as more clean coal technology comes on line in the Midwest and elsewhere under the federal clean coal technology program and corresponding state programs, such as the broadly-based State of Illinois effort to resolve environmental issues tied to Illinois coal usage.

More detail is provided later in this statement on the cooperation in Illinois between state government, universities, industries and the coal industry itself to utilize high-sulfur Illinois coal, or rather a lot more of it, in conformance with federal and state air quality regulations.

However, the positive scenario we are working to build in Illinois would be undercut sharply by the negative impact of measures such as H.R. 2497. That's our basic argument.

Even without the added burden of legislation like H.R. 2497, the Illinois coal industry has its back against the wall. Largely because of the already great difficulties in marketing much of our coal, at least five major mines have closed so far this year in

Illinois. Chances are strong that another three will be closed by the end of the year. All of these mines are among the some 45 major mines listed in Illinois at the start of the year. But, the statistic most depressing in terms of public morale in my state is the unemployment figure for coal miners. It now numbers 6,000, roughly one-third of the active work force of men and women miners in Illinois. The economic despair of this situation goes far beyond these individuals and their families, judging by the empty storefronts now dominating the main streets of many communities in coal-producing areas of downstate Illinois. So, again, we cannot afford any further erosion of our markets.

That brings me to the next point. Illinois coal use by industries other than utilities has been growing, but that trend would be threatened by the outcry in the state against H.R. 2497.

For example, take the A. E. Staley Manufacturing Company, one of the nation's largest corn refiners. Staley currently is constructing a new coal-fired boiler facility at its headquarters in Decatur, Illinois, that employs state-of-the-art fluidized bed boiler technology. The project is intended to permit a big increase in Illinois coal usage by Staley -- up to 510,000 tons of high-sulfur Illinois coal per year (more than double the present amount). However, Staley's tax bill for this new installation under H.R. 2497 would be nearly $3.5 million a year, even though emissions from the project will satisfy EPA standards. Thus, this added tax, Staley officials feel, will make Staley and other industrial operations in Illinois less competitive and, in addition, undercut incentives for increasing the use of Illinois coal.

Likewise, Illinois utilities are arguing that the taxes levied by H.R. 2497 will eliminate the incentive, or the option so to speak, to develop clean coal technologies. Illinois Power Company, a major user of our coal, believes that the proposed levies would become effective so soon that it would not be feasible to continue the development and implementation of such technologies. Also, Illinois Power officials believe that the projected sulfur dioxide control capabilities of these technologies are not extensive enough to reduce emissions from the burning of high-sulfur midwestern coal to below 0.6#SO_2/MBtu so as in order to avoid the taxes.

As opposed to the punitive approach to the acid rain issue of H.R. 2497, it is important to reiterate that the expanding push in Washington on clean coal technology development represents a very positive handling of the matter. As I indicated earlier, the federal effort is serving to complement the ongoing program of the State of Illinois for solving the problems tied to greater use of Illinois coal.

The state effort has received consistent support from the Administration of Governor James R. Thompson, from Illinois legislators from both parties and from the leaders of both Illinois coal companies and the United Mine Workers of America. In fact, promotion and maintenance of the state's clean coal program was considered important enough to help justify the formation a few years ago of the Illinois Coal Caucus in the state's General Assembly.

As for the role of the Thompson Administration, the Illinois Department of Energy and Natural Resources has been the lead agency in the state's effort to promote new uses and expanded markets for Illinois coal.

For instance, ENR is the sponsor of a wide range of research and development projects intended to find new and better coal cleaning and combustion methods. Since 1981, more than $11 million in state funds have been spent on laboratory scale research alone, much of it devoted to an unraveling of the sulfur problem limiting Illinois coal usage.

In addition, ENR participates in large scale demonstrations of innovative coal utilization technologies. More than $50 million in state funds have been committed to nine projects aimed at proving the effectiveness and reliability of advanced technologies such as fluidized bed combustion, low Btu coal gasification and new generation flue gas desulfurization. The state contribution to these projects is normally 10 to 20 percent of the project cost and is financed from a $115 million state coal development bond authorization.

As noted earlier, an increasing number of Illinois industries are looking to convert from oil or natural gas to coal. As a result of legislation passed in 1985, ENR is now offering low-interest loans to assist in such conversions. This multi-year effort, known as the Illinois Industrial Coal Utilization Program, provided for loans totaling up to $7 million during the last fiscal year.

All of ENR's coal projects are reviewed and approved for funding by the Illinois Coal Development Board, which is comprised of government and industry representatives. In addition to approving projects, the board advises ENR on its coal development programs and serves as an important link to the coal industry.

Another point to be emphasized is that the coal development panel oversees the state's Center for Research on Sulfur in Coal.

At this point, the center supports and coordinates research on the sulfur problems restricting Illinois coal usage at a number of research institutions in Illinois. They include the State Geological Survey, Southern Illinois University at Carbondale (through its Coal Research Center), the University of Illinois at Champaign-Urbana, Northwestern University, Argonne National Laboratory, the University of Illinois at Chicago, the Institute of Gas Technology in Chicago, the Illinois Institute of Technology at Chicago, the University of Chicago and Eastern Illinois University.

The scope of the center's Illinois coal research projects, covering subjects such as the removal of sulfur before combustion to produce a clean solid fuel, has attracted wide notice.

Furthermore, based on current commitments, Illinois coal companies will have contributed close to $1 million to the center by 1989 in a continuing effort to bolster the specific work of the center.

In summary, the Illinois coal industry believes that the nation is heading toward resolution of the acid rain controversy through reasonable and rational development of clean coal technologies and through the already-dictated provisions of the Federal Clean Air Act. Interruption of this positive movement should not be permitted by unnecessary proposals such as H.R. 2497.

Mr. **Downey**. Mr. Farrand.

STATEMENT OF CHRIS FARRAND, VICE PRESIDENT, GOVERNMENT RELATIONS, PEABODY HOLDING CO., INC.

Mr. **Farrand**. Thank you.

My name is Chris Farrand, I am vice president of government relations for Peabody Holding Co.

With your permission, I would like to submit my statement for the record and make a brief oral summary of two points.

Mr. **Downey**. Without objection, all of your statements will be in the record in their entirety.

Mr. **Farrand**. Mr. Chairman, we believe that this bill is inappropriate and in some cases confiscatory. What we tried to do is look at this from a producer's standpoint and analyze the effect of this tax on the price of our product delivered to its market. To do that, we took five powerplants located in different parts of the country, using five representative types of coal.

I would like to list those, if I could. We took coal from the Pittsburgh seam in Pennsylvania; coal from southern West Virginia that is basically low-sulfur coal; coal from the Powder River Basin in Montana; from the Illinois No. 6 seam, one of the largest coal reserves in this country; and, for Mr. Dorgan's benefit, we took North Dakota lignite coal.

The specific delivered prices for those coals are listed on page 5 of my testimony, and what we did was analyze the effect of the tax on the delivered price of each of those coals. Briefly, the results are as follows: In the Pennsylvania example, there is an increment in the fuel cost related to this tax of 29 percent. In the case of West Virginia, the increment is 42 percent, even though that is very low sulfur coal. In the case of Montana Powder River coal, the increment is 33 percent. In the case of Illinois, the increment is 216 percent, and in the case of North Dakota lignite, the increment is 139 percent.

I would further add that the Pennsylvania example, again with a 29-percent increment, allows for the fact that the coal used in that facility is equipped with a flue gas desulfurization unit, perhaps one of the most modern scrubbers in the country today. And yet it still has a 29-percent increment in the price of its fuel. The same is true of Montana coal. This is low-sulfur coal, and it is scrubbed at the powerplant, and yet the increment is still over one-third.

Put in that context, I would have to call the proposed tax, or at least the level of this tax as applied in real circumstances in relation to the price of the product, confiscatory.

Now I would like to put the proposal in the context of what has happened to the sulfur emissions issue. Several witnesses today have testified to the fact that while coal production has increased dramatically over the last decade an increase of 35 percent or more, sulfur emissions have, in fact, declined by something on the order of 28 percent. Given that fact, I think we would have to call our national strategy of controling air pollution a success story, at least with respect to sulfur dioxide.

Recent figures from EPA and from the National Acid Precipitation Assessment Program indicate that in relative terms, a relatively small number of people inhabit areas that experience periodic exceedances of current sulfur dioxide limits. The number they pose for sulfur dioxide is some 2.2 million people nationwide live in areas which periodically, during the course of a year, exceed the standard.

Let's put that in the context of other major criteria pollutants such as carbon monoxide. The number of people living in nonattainment areas for carbon monoxide is 39 million, and the figure for ozone is 76 million. Now, given the fact our emissions have declined and given the fact that we have a very limited amount of exposure in areas determined to be exceeding the national ambient air quality standards, particularly relevant to other criteria pollutants, it seems inappropriate to target, as we have in this bill, one particular pollutant, a pollutant which in relative terms we have had success in controlling.

I appreciate the opportunity to testify and would be happy to answer any questions.

[The statement of Chris Farrand follows:]

Testimony of

Chris Farrand

Vice President - Government Relations
Peabody Holding Company, Inc.

Before the

Ways and Means Committee

U. S. House of Representatives

on

H. R. 2497

The Sulfur and Nitrogen Emission Tax Act of 1987

Washington, D. C.
September 9, 1987

Mr. Chairman, Members of the Committee, my name is Chris Farrand, I am Vice President of Government Relations for Peabody Holding Company, Inc. Peabody, through its subsidiaries including Peabody Coal Company, is the nations largest producer of coal, with operating mines in 11 states producing both high-sulfur and low-sulfur coal.

We appear today to oppose H.R. 2497, the Sulfur and Nitrogen Emission Tax Act of 1987. We believe the proposed emission tax is inappropriate, punitive and confiscatory. Our testimony today will attempt to analyze the proposed tax from the producer perspective, relating the tax to the unit price of the fuel to which it is basically applied. We will also try to put the sulfur and nitrogen emission issues in their proper historical contexts.

It appears to us that the central focus of H. R. 2497 is to reduce emissions from the combustion of coal. The tax is applied most heavily to sulfur emissions, a by-product of fossil fuel combustion. The proposed tax on nitrogen emissions is applied in such a way that the burning of fuel oil in powerplants and industrial facilities is largely exempted from the tax. Since the tax is essentially a coal tax, we believe it should be viewed in the context of the coal market as well as the trends in sulfur emissions.

Coal is the nation's most abundant energy resource. There is active production of coal in 26 states, and there are sufficient reserves to provide adequate coal supplies for several hundred years at current rates of consumption. In the face of a growing reliance on imported energy resources, it seems inappropriate to discourage the use of our most secure and reliable source of energy. The proposed emission tax would create just such a disincentive toward the use of coal.

Since the principal purpose of H.R. 2497 is to encourage reductions in sulfur dioxide emissions from coal burning, we believe the relationship of coal consumption and emission trends is a pertinent background against which to judge the appropriateness of the proposed tax. Since 1975, consumption of coal in the U.S. has increased by more than 35 percent and consumption in the utility sector has increased by more than 54 percent. Utility consumption is now 85 percent of total coal consumption. While we have increased coal use, especially for the generation of electricity, we have also reduced emissions of sulfur dioxide. Concurrent with the dramatic 54 percent increase in utility coal consumption has been a 28 percent decrease in sulfur dioxide emissions. This has been the result of the current Clean Air Act, the shift to lower sulfur coals, and the widespread use of sulfur reduction technology applied to utility powerplants.

By almost any criterion, the U.S. has the world's most stringent air quality requirements, especially for sulfur dioxide (SO_2). Moreover, compliance with National Ambient Air Quality Standards (NAAQS) for sulfur dioxide is nearly universal. According to the Environmental Protection Agency, during the period 1976 to 1985 the annual average level of SO_2 in the air we breath has decreased by 42 percent while the number of exceedances of the 24-hour standard has decreased by 95 percent. As a result, less than one percent of the U.S. population are living in counties in which periodic exceedances of NAAQS for sulfur dioxide are experienced. This compares to some 39.6 million people living in areas violating NAAQS standards for carbon monoxide (CO) and 26.4 million people inhabiting counties violating current standards for ozone[1] (see Attachment 1).

In comparative terms at least, the regulation of sulfur emissions in the U.S. has been a success story. Against this background, a tax program focused primarily on sulfur emissions seems to us to be misdirected.

Now, we would like to discuss the proposed emission tax in terms of its relationship to coal prices. Rather than attempt to quantify the macroeconomic effect of the proposed tax, we would like to focus on representative examples of the tax as it affects specific powerplants and specific types of coal. We will attempt to show that the combined sulfur dioxide and nitrogen oxide emission taxes are confiscatory when viewed in relationship to the value of the fuel itself.

First, some background. There is significant variation in the sulfur content of different kinds of coal, and since sulfur emissions relate directly to the sulfur content of the coal being combusted, there will be significant differences in the way the proposed emission tax affects different coals and different coal producing regions of the country.

Nitrogen oxide emissions, on the other hand, relate more directly to the combustion process than to the content of the fuel. More specifically, nitrogen oxide emissions are largely the result of combustion itself and the rate of NO_x emissions usually correlates to the combustion temperature, with higher combustion temperatures resulting in higher emission rates. Hence, the same coal burned in different boiler types can have significantly different NO_x emission rates. However, because of coal characteristics not related to sulfur or nitrogen, certain types of coal work better in certain types of boilers having specific combustion temperature ranges. Thus, representative examples of specific coal types are useful for analyzing the effect of both the sulfur and nitrogen emission taxes.

Peabody has analyzed the combined SO_2 and NO_x tax rates affecting five specific types of coal from different regions of the country used in representative powerplants, generally within the same coal production regions. These coals are: Pennsylvania Pittsburgh seam, West Virginia low-sulfur, Montana Powder River Basin, Illinois No. 6 seam and North Dakota lignite. Each of the coals is burned in five separate and specific powerplants. Measuring heat rates, coal quality, boiler technology effects, and emission rates for both SO_2 and NO_x, we are able to quantify the amount of the tax as it relates to the cost of the coal, valued on a per ton basis. The results are as follows:

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[1] National Air Quality and Emission Trends Report, 1985 EPA-450/4-87-001.

Coal Type	Cost/ton* (delivered)	Combined Tax*	Fuel Cost Increase*
Pennsylvania (Pittsburgh)	$26.39	$7.59**	29%
West Virginia (Low-Sulfur)	31.24	13.16	42%
Montana (Powder River Basin)	23.22	7.61***	33%
Illinois (No. 6)	31.02	67.06	216%
North Dakota (Lignite)	13.30	18.47	139%

A more detailed breakdown of the analysis is appended to our testimony.

Some of the plants selected are already equipped with flue-gas desulfurization (FGD) equipment or scrubbers in order to reduce emissions, yet under H.R. 2497, they would still be required to pay sizeable penalties in the form of emissions taxes. It should also be noted that each of these plants is meeting current EPA air pollution requirements.

Perhaps an even more remarkable example is a relatively new facility in Indiana using the most modern FGD equipment called a dual alkali scrubber burning moderately high-sulfur Indiana coal. This plant meets the so-called New Source Performance Standard (NSPS) limit which is more stringent than the NAAQS requirements established for the protection of health and welfare. In spite of this advanced technology and compliance with these very stringent requirements, this plant would be required to pay over $2.0 million annually in emissions taxes. We believe such a tax is clearly punitive.

From the standpoint of a coal producer, the amount of the combined tax constitutes such a significant increase in the price of the fuel -- even for low-sulfur coals -- that the coal market in general will be severely disadvantaged when competing with other fuels for electricity generation.

For higher sulfur coals, another effect is also evident. The amount of the tax makes coal use in many plants altogether prohibitive. In the Illinois example cited earlier in my testimony, the total tax on the powerplant in question would amount to $313 million per year. This approximates the capital cost of retrofitting an FGD unit to the powerplant. The obvious implication is that the operator would quickly retrofit the plant, assuming such a retrofit is technologically feasible. However, it would be difficult indeed to finance such a retrofit while simultaneously bearing the heavy burden of the emissions tax. Moreover, even if the utility were financially and technologically able to retrofit the unit with a scrubber, the plant would still be liable for the NO_x portion of the emissions tax -- an amount estimated to be in excess of $90 million per year.

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*Based on 1985 data.

**Plant has a scrubber = 82 percent removal.

***Plant has a scrubber = 43 percent removal.

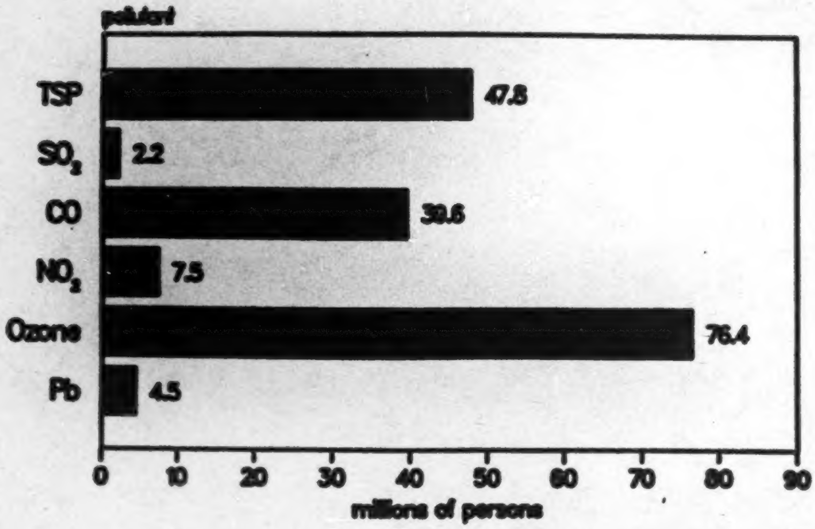
Mr. Chairman, it is inconceivable to us that Congress would seriously entertain the notion of placing so heavy a tax burden on one industry or one sector of the economy -- no matter what the perceived ancillary benefits might be. The idea seems even more incredible when it is considered that the tax would be applied to pollutants for which compliance standards are already being met.

Mr. Chairman, we believe H.R. 2497 is punitive, confiscatory and inappropriate both as a revenue measure and as a matter of environmental policy. We strongly urge its rejection by this Committee.

Thank you.

ATTACHMENT #1

- **Number of persons living in counties with air quality levels above the primary National Ambient Air Quality Standards in 1985 (Based on 1980 population data).**



TSP = Total Suspended Particulates
SO_2 = Sulfur Dioxide
CO = Carbon Monoxide
NO_2 = Nitrogen Dioxide
Pb = lead

Source: National Air Quality and Emission Trends Report, 1985
EPA-450/4-87-001 (Figure 1-1).

Attachment 2

Sample Coal Burning Power Plants
(1985 data)

Power Plant/ Coal Type	$/Ton Delivered	SO$_2$ rate lbs/MMBTU	NO$_x$ rate lbs/MMBTU	SO$_2$ tax/ Ton Coal	NO$_x$ tax/ Ton Coal	Total SANE Tax	Fuel Cost Increase
Penn. Power Bruce Mansfield Power Plant/ Pittsburgh Seam	$26.39	0.85*	0.75	$3.068	$4.52	$7.59	29%
Appalachian Power John E. Amos Power Plant/ W.VA low sulfur	$31.24	1.20	0.75	$8.664	$4.50	$13.16	42%
Minn. P & L Clay Boswell Power Plant/ MT Powder River Basin Coal	$23.22	1.19**	1.05	$3.087	$4.52	$7.61	33%
Illinois Power Baldwin Power Plant/ Illinois #6 Coal	$31.02	4.94	1.98	$47.88	$19.18	$67.06	216%
Basin Electric Leland Olds Power Plant/ N. Dakota Lignite	$13.30	2.44	1.12	$14.71	$3.76	$18.47	139%

* = 82% scrubber removal
** = 43% scrubber removal

attachment to testimony of
Peabody Holding Co., Inc.
House Ways and Means Cmte.
September 9,1987

Mr. Downey. Mr. Duncan.

Mr. Duncan. I have no questions.

Mr. Downey. Mr. Gregg.

Mr. Gregg. Well, we appear to be in disagreement. But I would like to just make a couple points here. I would like to ask a couple questions. You referred to a company in Illinois, a corn manufacturing company. What was the company?

Mr. Penson eau. The A.E. Staley Manufacturing Co. of Decatur.

Mr. Gregg. They are putting in a fluidized bed boiler you say.

Mr. Penson eau. Yes.

Mr. Gregg. I assume it has to do with complying with the fuel source emission standards, does it not?

Mr. Penson eau. I am sure it does. It has to certainly comply with applicable standards.

Mr. Gregg. If it does, it is going to reach 0.6. That is what the new source——

Mr. Penson eau. I don't believe so, sir.

Mr. Gregg. Well, I would like to find out the background of that issue.

Mr. Farrand. The current new source standard, as it applies to utility powerplants, is 1.2 pounds sulfur dioxide per million Btu's. The standard which applies to industrial facilities is a different regulation still in the process of being promulgated. But as it applies to utilities, it has to meet a ceiling of 1.2 pounds per million Btu's.

Mr. Gregg. So that is for a utility.

Can I ask another question? I guess this concept of confiscation sort of bothers me. You put it in very strong terms. You essentially said there are 2 million people who are affected. Of course, that is the ambient issue, that is not long-range. But it would seem to me if you want to talk about confiscation, confiscation is when you take an aquatic system and destroy it or take a form of floral function, such as white pine, and impact that. Or maybe confiscation is the American Lung Society's position that 40,000 people are killed every year as a result of inhaling air that is not of the quality that is appropriate, costing $16 billion just on the sulfur side.

I think the argument was made by Mr. Oates that you have got to balance these issues, and basically what you are saying is that those issues, the issues of health and environment, are outweighed by the economic impact of your production.

Mr. Farrand. I will comment on that, with the permission of my colleagues.

First of all, the figure on the premature deaths is not a figure of the American Lung Association, it was an analysis based on a study by two statistical economists, I believe from Harvard. It has been recanted by at least one of the two authors. I don't want to get into a statistical game with you, but we know the effects of this tax on our industry and the areas that will be affected by it.

What we don't know is what the benefits are—what really are we confiscating, if you will? A study indicated the amount of lakes in New England and New York which are affected by acidity is a much smaller number of lakes than was originally thought; on the order of 2 to 5 percent of the surface waters have any effect from excessive acidity.

So, we don't think we can quantify the balance at this point and come up with a positive sum analysis of whether to go ahead with this legislation or not. The point is we don't know what the benefits are of doing it. We do know what the costs are, but we don't know what the benefits are.

Mr. GREGG. That has been the position of your industry forever, and we disagree. Everyone can use numbers, of course. That 2 percent you referred to. Six percent translates into specific numbers, 50 percent of the lakes in Florida, 20 percent in the Adirondacks. There is a disagreement here, to say the least.

Mr. FARRAND. The numbers did not come from us.

Mr. GREGG. I am telling you what it is related to.

Mr. FARRAND. These numbers came from Congress', not ours.

Mr. GREGG. If you bring it down to specifics, you will find it is a significant impact in those areas that have soil types which are impacted dramatically by sulfur dioxide. I yield back.

Mr. DOWNEY. Thank you, members of the panel, for your testimony.

The committee will next hear from Mr. Justin Rogers, Mr. T.J. Glauthier, Mr. Richard J. Grant, Mr. Paul R. Huard, and Mr. James F. Collins.

Mr. Rogers, we will begin with you.

STATEMENT OF JUSTIN T. ROGERS, JR., PRESIDENT AND CHIEF EXECUTIVE OFFICER, OHIO EDISON CO., REPRESENTING EDISON ELECTRIC INSTITUTE

Mr. ROGERS. Thank you. I am Justin Rogers, president and chief executive officer of the Ohio Edison Co. With our subsidiary, Pennsylvania Power, we make up the Ohio Edison System. We provide electric service to 3 million people in central and northern Ohio and western Pennsylvania.

I appreciate the opportunity to comment on H.R. 2497. I am testifying in opposition to this bill on behalf of the Edison Electric Institute, the association of electric companies in this country. EEI's members serve 97 percent of all customers of the U.S. investor-owned segment of the industry.

Although H.R. 2497 is a tax bill, as has been pointed out today, it is without question an acid rain control bill as well. For that reason, I will address both aspects of the bill.

There are three major environmental considerations I bring to your attention. First, scientific support for acid rain control legislation is lacking. Second, existing legislation is already accomplishing a significant reduction in emissions; and, third, enactment of H.R. 2497 would disrupt progress on existing emission reduction programs.

After years of debate, scientific support for acid rain control legislation still is lacking. Despite years of unfounded warnings of ecological disaster from environmental groups, there is no sound scientific basis to show acid rain is a problem running out of control. In fact, scientific data, as documented by the most recent report of the Government's own assessment program, indicate just the opposite to be true. This is in contrast, I would point out, to the situation preceding the enactment of Superfund legislation where numerous identifiable toxic waste sites required cleanup.

Existing legislation, including the Clean Air Act, is already accomplishing a significant reduction of emissions, as has been pointed out. According to recent reports from the U.S. Environmental Protection Agency, total emissions decreased 28 percent between 1973 and 1985, largely as a result of reductions by the electric utility industry. These reductions have been very expensive.

To help accomplish them, the electric utility industry has installed more than 140 scrubbers, and another 45 scrubbers will be brought on line by the 1990s. I am familiar with some of the problems with scrubbers. My own company has built three. The cost of scrubbers and other air pollution control efforts in the United States has now exceeded $29 billion annually with $10 billion of this cost being paid by customers of the electric utility industry.

Passage of acid rain legislation, whether in the form of emission reductions or as a tax, may retard the development of promising programs for emission reductions by diverting funds from emerging clean coal technologies. Also, as a tax bill, H.R. 2497 has serious tax policy defects. It is both regressive and unfairly disproportionate. As shown on the charts attached to my prepared statement, two-thirds of the revenues that would be generated by the tax would come from just nine States: Ohio, my own State, Indiana, Pennsylvania, Illinois, Missouri, Georgia, West Virginia, Tennessee, and Kentucky.

Industrial, commercial and residential customers located in these States would incur a 27 percent increase in the cost of electricity, with a nationwide increase in those costs of 10 percent. The impact on these States, which already have been hard hit by swings in the economy and foreign competition, would be disproportionate and unfair.

In addition, the proposed tax would be unfairly regressive, disproportionately penalizing low and fixed-income electric customers. The Southern Governors Association recognized the nature of excise taxes in adopting a resolution opposing any Federal excise tax increase. EEI believes the regressive nature of this tax is clearly inconsistent with equitable tax policy.

In conclusion, the Edison Electric Institute and its members believe that the passage of H.R. 2497 would be a serious mistake. We agree with the thrust of the editorial which appeared in the March 22, 1987, edition of the Washington Post. It concluded by asking, and I quote, "With the cost of controlling air pollution already over $30 billion a year, how much more should the country spend on it? And is acid rain necessarily the top priority?"

Mr. Chairman, this concludes my prepared statement. I would be pleased to answer any questions that you or the members of your committee might have. Thank you.

[The statement of Justin T. Rogers follows:]

TESTIMONY OF JUSTIN T. ROGERS, JR.
PRESIDENT AND CHIEF EXECUTIVE OFFICER
OHIO EDISON COMPANY
FOR THE EDISON ELECTRIC INSTITUTE
BEFORE THE HOUSE WAYS AND MEANS COMMITTEE
ON
H.R. 2497

September 9, 1987

Mr. Chairman and members of the Committee: I am Justin T. Rogers, Jr., president and chief executive officer of the Ohio Edison Company. With our subsidiary company, Pennsylvania Power, we make up the Ohio Edison system. We provide electric service to three million people in central and northeastern Ohio and western Pennsylvania. I appreciate the opportunity to testify on this proposed legislation.

I am testifying in opposition to this legislation on behalf of the Edison Electric Institute ("EEI"), the association of investor owned electric companies. Its members serve 97 percent of all customers served by the investor-owned segment of the industry. They generate and distribute approximately 76 percent of all the electricity in the country and serve 73 percent of all electric customers in the nation.

My testimony today addresses H.R. 2497, the "Sulfur and Nitrogen Emissions Tax Act of 1987". EEI views this bill as having two principle aspects, one affecting environmental policy and the second affecting tax policy. I will first address the environmental policy aspects with respect to acid rain control legislation and then discuss the tax policy aspects of the proposed legislation.

I. Environmental Policy Aspects -- There is No Need for H.R. 2497.

There are three major environmental policy concerns that should be taken into account in assessing H.R. 2497. First, scientific support for acid rain control legislation is lacking. Second, existing legislation is already accomplishing a significant reduction in emissions of sulfur dioxide and nitrogen oxides. Third, enactment of H.R. 2497 or comparable legislation would disrupt progress on existing emissions reduction programs.

A. Scientific Support for Acid Rain Control Legislation is Lacking.

After years of debate, scientific support for acid rain control legislation still is lacking. In spite of years of talk about the threat of disaster by environmental groups, there is no immediate environmental crisis. There is no scientific support for the contention that acid rain is a problem beyond control. In fact, evolving science indicates that the opposite is true, as documented by the 1986 Annual Report of the National Acid Precipitation Assessment Program ("NAPAP"), the Federal government's 10-year scientific research program investigating acid rain impacts. This is in contrast to the situation preceding the enactment of the Superfund legislation where there were numerous identifiable toxic waste sites which required cleanup.

NAPAP's investigation of acid rain impacts indicates that only a small number of Eastern lakes are at risk of acidification from current levels of acid rain. Western acid rain levels in no way threaten surface waters in that half of our country.

NAPAP also has investigated potential forest damage due to acid deposition. Current data shows acidity not to be a primary cause of forest damage. In areas which do exhibit stress, that stress is more likely caused by ozone, heavy metals, climatic stress (freeze, thaw, snow, drought), disease and biological pests.

As for crops, acid rain in amounts and concentrations that occur over the entire United States appears to have no significant negative impacts. In fact, in certain areas, the nitrogen input from the atmosphere may have a positive fertilizing effect.

While final scientific data from the NAPAP Program will not be available until 1990, it is obvious from the annual reports and interim findings that no environmental crisis exists due to acidification.

B. Further Legislation to Reduce Emissions is Unnecessary.

If the thrust of acid rain legislative proposals is to reduce emissions, the legislation is simply not needed. The current Clean Air Act is accomplishing this in dramatic fashion. Recent reports from the U.S. Environmental Protection Agency indicate total U.S. sulfur dioxide emissions decreased by 28 percent between 1973 and 1985. This represents an annual reduction of 8 million tons in sulfur dioxide emissions. The electric utility industry is primarily responsible for these reductions. These reductions are even more impressive because they were accomplished at a time when coal use in this country soared by 80 percent. Despite these dramatic reductions in sulfur dioxide emissions, the best research to date, including NAPAP, has found no change in the acidity of rainfall.

These efforts to reduce emissions have been very expensive. The electric utility industry has installed more than 140 flue gas desulfurization systems, better known as "scrubbers". Another 45 scrubbers are in the construction or design stage and will be brought on line by the 1990's. The cost of a single scrubber can be more than $100 million. According to the President's Council on Environmental Quality, the cost of these scrubbers and other air pollution control efforts in our country exceeds $29 billion annually. The customers of the electric utility industry spend about $10 billion annually just for air pollution control at power plants.

C. Enactment of H.R. 2497 or Comparable Legislation Would Negatively Impact Progress Towards Emissions Reduction.

Passage of acid rain legislation, whether in the form of emissions reductions or as a tax, would retard the promising programs in place for emissions reduction. If forced to achieve additional emissions reductions in the proposed time periods, the electric utility industry probably would resort either to fuel switching or installation of scrubbers. One choice leads to societal disruption in the coal industry and may be prohibited by section 125 of the Clean Air Act. The other choice leads to economic hardship on electric consumers and the economy. Funding for clean coal programs would be diverted to the purchase of more costly, lower sulfur fuels, or to build and operate scrubbers just as many of the clean coal technologies are moving into the commercial demonstration phase. As we move into the 1990's, scientific findings will be available and clean coal technologies will have been demonstrated. We should insure that funds also will be available rather than paying for unneeded equipment as H.R. 2497 would require.

The record of U.S. industry in general, and the electric industry in particular, in reducing emissions has been impressive. But these efforts must be carried forward into the future. The Clean Coal Technology Program, as recommended by the U.S.-Canadian Special Envoys on Acid Rain, is one major way to insure that this occurs. Industry and government working together to accomplish the dual goal of sound energy policy through the use of domestic coal and continued protection of our air quality is vital. I believe the Reagan Administration and the Congress stand ready to move forward. As for industry, the responses to the two solicitations from the Department of Energy for clean coal projects numbered well over 100. Industry stands ready to do its part.

II. H.R. 2497 Would Represent Defective Tax Policy.

The tax proposed under H.R. 2497 has serious tax policy defects from the perspective of fairness and equity. Its effect would be regressive, unfairly disproportionate, and harmful to the economy. Moreover, it may result in a net revenue loss.

A. The Proposed Tax Would Have An Unfair Disproportionate Impact.

The sponsors of H.R. 2497 estimate that it would raise taxes by $15 billion annually from all industries. As reflected in the attached charts, based on 1985 electric utility industry emissions data, the enactment of this legislation would result in a tax increase of approximately $16.3 billion annually just from investor-owned and publicly-owned electric utilities. While actual tax collections would be less as a result of behavioral modification, we know that such behavioral modification would be costly. As is also reflected in the attached charts, approximately two-thirds of the proposed revenues generated by the tax would come from just nine states: Ohio, Indiana, Pennsylvania, Illinois, Missouri, Georgia, West Virginia, Tennessee, and Kentucky. Industrial, commercial, and residential customers located in these states would incur a dramatic 27% increase in the cost of electricity, with a 10% increase nationwide. The cost of electricity for residential customers in these nine states would increase by $140 to $180 per year. These drastic increases will disproportionately impact the residents of these states in a clearly unfair manner. These states already have been hard hit by swings in the economy and pressures from foreign competition. In addition, industries located in these states, particularly our basic industries, are just now coming to grips with the changes made by the Tax Reform Act of 1986. This would increase their costs and the costs of their products. This uneven and disproportionate impact is indefensible from a fairness standpoint.

B. The Proposed Tax Will Be Unfairly Regressive and May Result In a Net Revenue Loss.

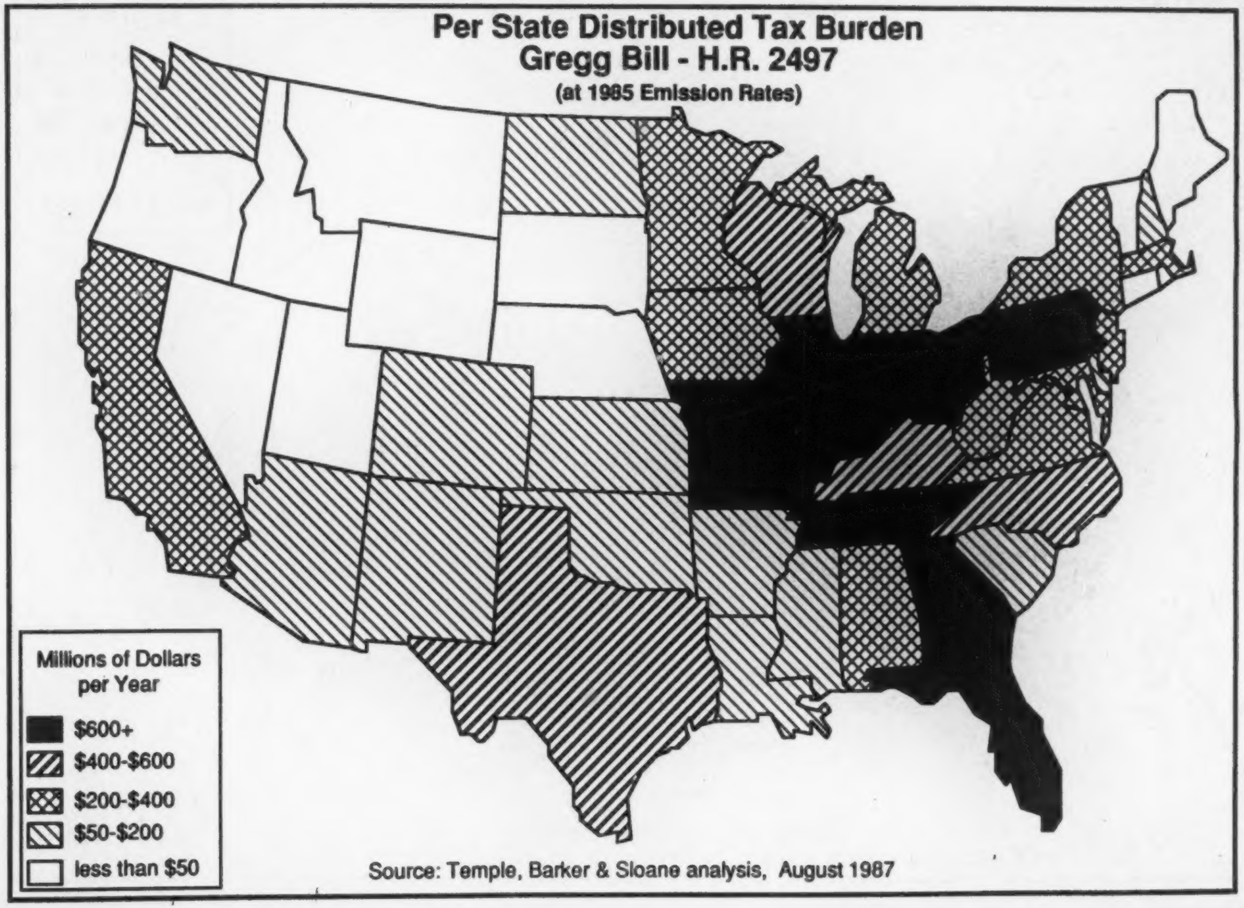
The proposed tax would be unfairly regressive, disproportionately penalizing low- and fixed-income residential taxpayers. The Southern Governors' Association just last week recognized the regressive nature of excise taxes in adopting a resolution opposing any Federal excise tax increase. EEI believes the regressive nature of this tax is clearly inconsistent with equitable tax policy, in particular the principles of the Tax Reform Act of 1986.

In addition, EEI believes that H.R. 2497 may result in a net revenue loss. Under H.R. 2497 it appears that total gross revenues raised by the tax would be spent through the trust fund to be established. As a result, new spending would completely off set gross revenues raised. Separately, as is the case for other business expenses, the excise tax would be deductible, thereby reducing tax revenues generally. The overall effect of the legislation, therefore, could be a net revenue loss, a result clearly inconsistent with current deficit concerns.

III. Conclusion.

To summarize, the nation's electric utilities encourage you not to consider favorably H.R. 2497 or any comparable legislation. It is inconsistent with sound tax policy in that it would be both regressive and disproportionate. In addition, it would represent a significant tax increase. From an environmental policy perspective, the legislation is unjustified because the scientific support for acid rain control is lacking, existing law is already accomplishing a significant reduction in emissions of sulfur dioxide and nitrogen oxides, and enactment of the legislation would negatively affect progress towards emissions reduction.

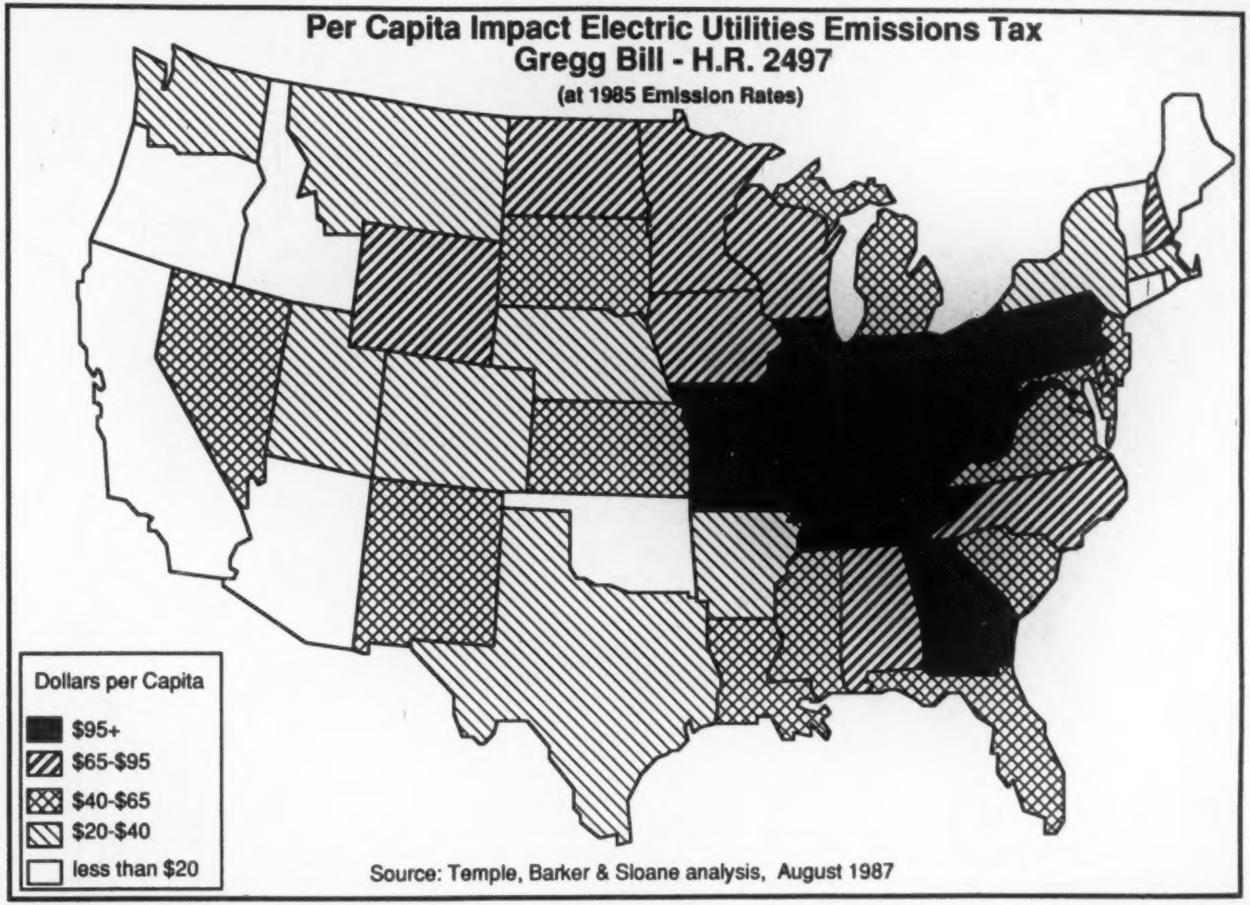
We would agree with the thrust of an editorial which appeared in the March 22, 1987, Washington Post. It posed the key question: "With the cost of controlling air pollution already over $30 billion a year, how much more should the country spend on it -- and is acid rain necessarily the top priority?" We believe that we are spending enough and that the spending level is consistent with the priority level of acid rain among the myriad of social, environmental, international, and economic demands facing the nation.



Per State Distributed Tax Burden
Gregg Bill - H.R. 2497
(at 1985 Emission Rates)

Millions of Dollars per Year
■ $600+
▨ $400-$600
▩ $200-$400
▧ $50-$200
□ less than $50

Source: Temple, Barker & Sloane analysis, August 1987



Per Capita Impact Electric Utilities Emissions Tax
Gregg Bill - H.R. 2497
(at 1985 Emission Rates)

Dollars per Capita
$95+
$65-$95
$40-$65
$20-$40
less than $20

Source: Temple, Barker & Sloane analysis, August 1987

Mr. **Pease** [presiding]. Thank you very much, Mr. Rogers. Some people achieve glory; others have glory thrust upon them. I just had the chairmanship thrust upon me as I walked in the room. I just want to note my pleasure at being here to pick up the end of the testimony of Justin Rogers.

Mr. **Duncan**. That is the first time I have been chairman until you walked in.

Mr. **Pease**. At any rate, Mr. Rogers, as president of the company which supplies electricity to much of my district—and I must say supplies it very well—I am delighted to have you here today.

Going down the list, I think Mr. Glauthier is next.

STATEMENT OF T.J. GLAUTHIER, VICE PRESIDENT, TEMPLE, BARKER & SLOANE, INC.

Mr. **Glauthier**. Mr. Chairman, members of the committee, thank you for the opportunity to appear before you today. I am T.J. Glauthier, a vice president in the management consulting firm of Temple, Barker & Sloane, Inc., headquartered in Lexington, MA. I have been responsible for a number of economic analyses that my firm has conducted of various acid rain control bills over the past few years. Our work has been undertaken on behalf of the nation's investor-owned electric utilities, through their trade association, the Edison Electric Institute.

I am here today to share with you the results of the economic analysis that we have conducted of H.R. 2497, the Sulfur and Nitrogen Emissions Tax Act of 1987. We have examined in some detail the amount and geographic distribution of the taxes that would be levied under this bill on the electric utility industry. We have used 1985 operating and financial data in our analysis, since that is the latest full year for which the data are available.

There have been four major analytical steps involved in our effort. We started by calculating the statewide tax liabilities using emissions data from a detailed data base of 2,400 generating units in the United States in 1985.

We then adjusted those State-by-State tax totals to account for the major interchanges of power among states, based on recent historical patterns.

Next we used our computer model to estimate rate impacts by state for each of the major customer classes: residential, commercial and industrial. Finally, we were asked to compute the State-by-State tax costs on a "cost per capita" basis.

Let me also mention what we have not done. We have not attempted an economic evaluation of potential benefits, if any, that might come from this legislation. Further, while we have examined the economic incentives that this bill would create at the individual plant and generating unit level, we have not run our computer models to predict the likely extent of utility actions to switch fuels, build scrubbers, prematurely close plants, or take other steps to reduce their tax liability under this bill. Furthermore, we have not projected the tax out into the future, but believe that full implementation of the tax in 1991 would be close to the figures presented here.

I will summarize the conclusions we have reached and will be happy to elaborate upon them in response to questions.

First, the taxes under this bill would be high, especially in Midwestern States. Based on 1985 operating levels and emission rates, this tax would cost the electric utility industry and its customers $16.3 billion a year. Of course, this total amount would be reduced to the extent that utilities act to reduce emissions rather than to continue to pay the tax.

Of the total tax liability, the dominant portion, 75 percent or $12.1 billion, comes from the tax on sulfur dioxide emissions. The remaining 25 percent, or $4.2 billion, comes from nitrogen oxide emissions.

The geographic distribution of the taxes, after adjustments for interstate sales, would concentrate almost two-thirds of the total, $10.2 billion, in nine States in the Midwest and South.

Second, the customer rate increases needed to pay for these taxes would be high, even on a national average basis, and would be very high in the most hard-hit States. On a national basis, a full passthrough of this tax could result in a 10.9 percent rate increase for all electricity customers.

These increases would affect all types of electricity customers. Residential customers nationwide would see an average rate increase of 9.5 percent, with statewide average increases of over 20 percent in five States. Commercial customers would see their rates increase a little more in most States.

Industrial customers would experience the highest percentage rate increases, because their rates are generally lower to begin with. On a national basis, assuming the full cost of the tax were passed on, the average industrial rate increase would be 14.0 percent, with 10 States over 20 percent and one as high as 50 percent. It is also worth noting that the electric utility industry is having to be more competitive on rates for large customers. Accordingly, there is some risk that not all of these costs could be passed on, which would increase costs further to other customers and to shareholders.

Third, the per capita tax burden would vary widely among the States. We were asked by EEI to present this data on the basis of the total tax burden per capita. This was calculated simply by dividing the total tax that would be paid by businesses and individuals within each State by the State's population. This is one measure of relative tax burden, although some portion of the commercial and industrial tax expense would presumably be passed on to purchasers of those goods and services in other States in the form of price increases.

The national average per capita tax burden would be $68 per year, based on 1985 data. The State-by-State figures would vary from near zero in some States to over $200 per year in three States: Tennessee ($201), Indiana ($218), and Ohio ($238). Table 3 presents the figures for all States.

I would be happy to answer questions and to share additional information regarding our analysis to aid you in evaluating this bill.

Thank you.

[The statement of T.J. Glauthier follows:]

TESTIMONY OF T. J. GLAUTHIER
VICE PRESIDENT, TEMPLE, BARKER & SLOANE, INC.

ON H.R. 2497, THE "SULFUR AND NITROGEN EMISSIONS TAX ACT OF 1987"

HOUSE WAYS AND MEANS COMMITTEE
SEPTEMBER 9, 1987

Mr. Chairman, Members of the Committee, thank you for the opportunity to appear before you today. I am T.J. Glauthier, a Vice President in the management consulting firm of Temple, Barker & Sloane, Inc., headquartered in Lexington, Massachusetts. I have been responsible for a number of economic analyses that my firm has conducted of various acid rain control bills over the past few years. Our work has been undertaken on behalf of the nation's investor-owned electric utilities, through their trade association, the Edison Electric Institute.

I am here today to share with you the results of the economic analysis that we have conducted of H.R. 2497, the "Sulfur and Nitrogen Emissions Tax Act of 1987". We have examined in some detail the amount and geographic distribution of the taxes that would be levied under this bill on the electric utility industry. We have used 1985 operating and financial data in our analysis, since that is the latest full year for which the data are available.

There have been four major analytical steps involved in our effort. We started by calculating the state-wide tax liabilities using emissions data from a detailed database of 2,383 coal-, oil-, and gas-fired electric utility generating units in the U.S. in 1985. Since there is no comparable database of actual emission rates for nitrogen oxides, we obtained estimates from the Electric Power Research Institute of typical nitrogen oxide emission rates for various boiler types.

We then adjusted those state-by-state tax totals to account for the major interchanges of power among states, based on recent historical patterns. This methodology reflects our assumption that the tax costs would be borne by those customers--in-state and out-of-state--that ultimately use the electric power from each electric utility company.

Next we used our computer model to estimate rate impacts by state for each of the major customer classes: residential, commercial, and industrial. Finally we were asked to compute the state-by-state tax costs on a "cost per capita" basis, simply dividing the tax that would be passed on to all customers in each state by the total population.

Let me also mention what we have not done. We have not attempted an economic evaluation of potential benefits, if any, that might come from this legislation. Further, while we have examined the economic incentives that this bill would create at the individual plant and generating unit level, we have not run our computer models to predict the likely extent of utility actions to switch fuels, build scrubbers, prematurely close plants, or take other steps to reduce their tax liability under this bill. Furthermore, we have not projected the tax out into the future, but believe that full implementation of the tax in 1991 would be close to the figures presented here.

I will summarize the conclusions we've reached, and will be happy to elaborate upon them in response to questions.

First, the taxes under this bill would be high, especially in midwestern states. Based on 1985 operating levels and emission rates, this tax would cost the electric utility industry and its customers $16.3 billion a year. Of course, this total amount would be reduced to the extent that utilities act to reduce emissions rather than to continue to pay the tax. The state-by-state results of our tax calculations are included in Table 1.

Of the total tax liability, the dominant portion, 75 percent or $12.1 billion, comes from the tax on sulfur dioxide emissions. That is also where the most reliable data are concerning emissions and emission rates. The remaining 25 percent, or $4.2 billion, comes from nitrogen oxide emissions, about which there is substantially less data and more uncertainty.

The geographic distribution of the taxes, after adjustments for interstate sales, would concentrate almost two-thirds of the total, $10.2 billion, in nine states in the midwest and south. Those states are the ones from Missouri to Pennsylvania, along with Kentucky, Tennessee, Georgia and Florida. Eight of those states would have over $600 million in annual taxes each.

Second, the customer rate increases needed to pay for these taxes would be high, even on a national average basis, and would be very high in the most hard-hit states. On a national basis, a full pass-through of this tax could result in a 10.9 percent rate increase for all electricity customers across the country. Again, that is based on the total tax amount, before considering whatever utilities might be able to do to reduce that.

These increases would affect all types of electricity customers. Residential customers nationwide would see an average rate increase of 9.5 percent, with statewide average increases of over 20 percent in five states. Commercial customers would see their rates increase a little more in most states.

Assuming the tax would be passed on as a uniform incremental charge per kilowatt hour, industrial customers would experience the highest percentage rate increases, because their rates are generally lower to begin with. On a national basis, assuming the full cost of the tax were passed on, the average industrial rate increase would be 14.0 percent, with ten states over 20 percent and one as high as 50 percent. It is also worth noting that the electricity utility industry is having to be more competitive on rates for large customers. Accordingly, there is some risk that not all of these costs could be passed on, which would increase costs further to other customers and to shareholders. Table 2 presents the customer rate increase calculations for all states.

Third, the per capita tax burden would vary widely among the states. We were asked by EEI to present this data on the basis of the total tax burden per capita. This was calculated simply by dividing the total tax that would be paid by businesses and individuals within each state by the state's population. This is one measure of relative tax burden, although some portion of the commercial and industrial tax expense would presumably be passed on to purchasers of those goods and services in other states in the form of price increases.

The national average per capita tax burden would be $68 per year, based on 1985 data. The state-by-state figures would vary from near zero in some states to over $200 per year in three states: Tennessee ($201), Indiana ($218), and Ohio ($238). Table 3 presents the figures for all states.

I would be happy to answer questions and to share additional information regarding our analysis to aid you in evaluating this bill.

Thank you.

TABLE 1

H.R. 2497

COST TO UTILITIES OF PROPOSED SO2 AND NOx TAX

Based on 1985 Operating and Emission Rates
(millions of dollars)

STATE	SO2 TAX	NOx TAX	TOTAL TAX	ADJUSTED FOR INTER-STATE TRANSFERS
Alabama	$407.0	$97.5	$504.5	$368.2
Alaska	0.0	0.0	0.0	0.0
Arkansas	16.4	58.5	74.9	53.3
Arizona	24.1	53.5	77.6	55.7
California	3.0	0.4	3.4	208.0
Colorado	30.6	75.7	106.3	106.3
Connecticut	23.5	8.5	32.0	32.0
DC	0.2	0.1	0.3	0.3
Delaware	36.9	13.1	50.0	50.0
Florida	338.4	168.4	506.8	696.0
Georgia	822.4	123.8	946.2	825.1
Hawaii	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	8.6
Iowa	157.0	59.9	216.9	271.0
Illinois	823.2	288.4	1111.6	1330.7
Indiana	1245.6	288.5	1534.1	1201.3
Kansas	52.6	67.0	119.6	119.6
Kentucky	477.8	193.4	671.2	594.0
Louisiana	61.5	49.4	110.9	188.1
Massachusetts	145.7	86.9	232.6	232.6
Maryland	171.9	44.0	215.9	281.2
Maine	11.4	1.2	12.6	12.6
Michigan	250.9	133.0	383.9	383.9
Minnesota	111.0	63.5	174.5	311.2
Missouri	807.4	166.5	973.9	811.7
Mississippi	88.1	21.0	109.1	157.6
Montana	10.6	16.4	27.0	18.4
North Carolina	196.3	210.3	406.6	406.6
North Dakota	78.5	103.9	182.4	59.2
Nebraska	18.0	26.1	44.1	44.1
New Hampshire	59.3	25.9	85.2	85.2
New Jersey	72.3	51.7	124.0	320.0
New Mexico	4.2	149.5	153.7	70.7
Nevada	8.4	45.7	54.1	38.5
New York	311.0	63.6	374.6	374.6
Ohio	1918.4	313.1	2231.5	2560.3
Oklahoma	25.3	39.2	64.5	64.5
Oregon	0.7	1.4	2.1	2.1
Pennsylvania	1022.7	198.3	1221.0	1177.6
Rhode Island	3.3	0.3	3.6	3.6
South Carolina	107.3	44.7	152.0	152.0
South Dakota	34.2	21.7	55.9	42.5
Tennessee	685.6	125.2	810.8	955.8
Texas	156.8	282.7	439.5	439.5
Utah	6.1	27.1	33.2	33.2
Virginia	78.6	33.5	112.1	330.0
Vermont	1.7	0.6	2.3	2.3
Washington	82.5	14.6	97.1	97.1
Wisconsin	348.6	101.9	450.5	450.5
West Virginia	721.7	181.0	902.7	249.0
Wyoming	52.2	70.0	122.2	38.0
Total	$12.1 billion	$4.2 billion	$16.3 billion	$16.3 billion

Note: 1) SO2 rates based on 1985 SO2 emission data
2) Average NOx emission rates for various boiler categories supplied by Electric Power Research Institute, based on SO2 and NOx Retrofit Control Technologies Handbook, October 1985

TABLE 2

H.R. 2497

20 - YEAR LEVELIZED ANNUAL COSTS AND AVERAGE RATE INCREASES BY STATE

STATE	TOTAL IN-STATE COSTS ($mm)	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OVERALL
Alabama	$368.2	10.5%	9.8%	14.7%	12.0%
Alaska	0.0	0.0	0.0	0.0	0.0
Arkansas	53.3	3.0	3.5	4.7	3.6
Arizona	55.7	2.1	2.3	3.3	2.4
California	208.0	1.5	1.3	1.5	1.5
Colorado	106.3	5.9	6.7	9.2	6.7
Connecticut	32.0	1.4	1.5	1.8	1.5
DC	0.3	0.1	0.0	0.1	0.1
Delaware	50.0	8.4	10.2	14.5	10.9
Florida	696.0	7.4	8.5	10.8	8.2
Georgia	825.1	19.6	18.9	27.4	21.5
Hawaii	0.0	0.0	0.0	0.0	0.0
Idaho	8.6	1.2	1.3	2.0	1.5
Iowa	271.0	13.8	14.4	22.7	16.4
Illinois	1330.7	14.9	17.3	25.2	18.6
Indiana	1201.3	29.7	35.8	41.1	35.4
Kansas	119.6	5.9	6.6	8.6	6.8
Kentucky	594.0	19.3	19.4	23.1	23.0
Louisiana	188.1	4.4	4.5	6.6	5.2
Massachusetts	232.6	6.9	7.3	8.7	7.4
Maryland	281.2	9.8	9.9	14.8	11.3
Maine	12.6	1.6	1.6	2.4	1.9
Michigan	383.9	7.2	6.8	9.1	7.8
Minnesota	311.2	12.4	13.8	18.3	14.9
Missouri	811.7	27.4	30.0	39.7	30.6
Mississippi	157.6	9.6	9.1	12.3	10.2
Montana	18.4	3.2	3.6	6.0	4.3
North Carolina	406.6	8.1	9.3	10.8	9.2
North Dakota	59.2	14.2	13.3	16.5	15.0
Nebraska	44.1	4.7	4.9	7.3	5.3
New Hampshire	85.2	13.5	14.4	17.9	15.0
New Jersey	320.0	5.4	6.2	7.6	6.2
New Mexico	70.7	6.9	7.5	10.8	8.4
Nevada	38.5	5.3	5.4	7.6	6.0
New York	374.6	3.0	3.1	6.2	3.7
Ohio	2560.3	26.8	29.0	50.7	35.9
Oklahoma	64.5	2.8	3.0	3.9	3.1
Oregon	2.1	0.1	0.1	0.2	0.1
Pennsylvania	1177.6	13.8	15.5	19.9	16.3
Rhode Island	3.6	0.7	0.8	0.9	0.8
South Carolina	152.0	4.7	5.4	7.9	6.0
South Dakota	42.5	11.6	11.7	17.6	12.8
Tennessee	955.8	29.0	24.9	28.7	28.3
Texas	439.5	2.8	3.1	4.2	3.3
Utah	33.2	3.1	3.6	4.9	3.8
Virginia	330.0	8.7	9.6	13.4	10.0
Vermont	2.3	0.7	0.7	0.8	0.7
Washington	97.1	3.2	3.5	5.7	4.0
Wisconsin	450.5	16.1	17.2	25.1	18.9
West Virginia	249.0	20.3	21.8	32.2	24.9
Wyoming	38.0	6.4	7.0	10.3	8.5
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NATIONAL	$16.3 billion	9.5%	9.7%	14.0%	10.9%

Note: (1) Based on 1985 data for emission rates, plant utilization, and customer rates.

TABLE 3

H.R. 2497

PER CAPITA TAX BURDEN

STATE	TOTAL IN-STATE COSTS ($mm)	POPULATION (thousands)	PER CAPITA TAX BURDEN
Alabama	$368.2	4,021	$91.57
Alaska	0.0	521	$0.00
Arkansas	53.3	2,359	$22.58
Arizona	55.7	3,187	$17.47
California	208.0	26,365	$7.89
Colorado	106.3	3,231	$32.90
Connecticut	32.0	3,174	$10.08
DC	0.3	626	$0.48
Delaware	50.0	622	$80.39
Florida	696.0	11,366	$61.24
Georgia	825.1	5,976	$138.07
Hawaii	0.0	1,054	$0.00
Idaho	8.6	1,005	$8.56
Iowa	271.0	2,884	$93.96
Illinois	1330.7	11,535	$115.36
Indiana	1201.3	5,499	$218.46
Kansas	119.6	2,450	$48.82
Kentucky	594.0	3,726	$159.43
Louisiana	188.1	4,481	$41.97
Massachusetts	232.6	5,822	$39.95
Maryland	281.2	4,392	$64.03
Maine	12.6	1,164	$10.82
Michigan	383.9	9,088	$42.24
Minnesota	311.2	4,193	$74.21
Missouri	811.7	5,029	$161.40
Mississippi	157.6	2,613	$60.32
Montana	18.4	826	$22.28
North Carolina	406.6	6,255	$65.00
North Dakota	59.2	685	$86.41
Nebraska	44.1	1,606	$27.46
New Hampshire	85.2	998	$85.37
New Jersey	320.0	7,562	$42.31
New Mexico	70.7	1,450	$48.76
Nevada	38.5	936	$41.17
New York	374.6	17,783	$21.07
Ohio	2560.3	10,744	$238.30
Oklahoma	64.5	3,301	$19.54
Oregon	2.1	2,687	$0.78
Pennsylvania	1177.6	11,834	$99.51
Rhode Island	3.6	968	$3.72
South Carolina	152.0	3,347	$45.41
South Dakota	42.5	708	$59.96
Tennessee	955.8	4,762	$200.72
Texas	439.5	16,370	$26.85
Utah	33.2	1,645	$20.18
Virginia	330.0	5,706	$57.84
Vermont	2.3	535	$4.30
Washington	97.1	4,409	$22.02
Wisconsin	450.5	4,775	$94.35
West Virginia	249.0	1,936	$128.60
Wyoming	38.0	509	$74.72
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	$16.3 billion	238.7 million	$68.34 per capita

Mr. **Pease**. Thank you, Mr. Glauthier.

Next we will have Richard J. Grant, manager, environmental affairs department, Central Illinois Public Service Co.

STATEMENT OF RICHARD J. GRANT, MANAGER, ENVIRONMENTAL AFFAIRS DEPARTMENT, CENTRAL ILLINOIS PUBLIC SERVICE CO.

Mr. **Grant**. I am Richard Grant, manager of the environmental affairs department for Central Illinois Public Service Co.

We thank you for allowing us to present our views on the proposed sulfur and nitrogen emissions tax legislation, H.R. 2497.

CIPS is an electric and natural gas utility operating in 65 of the State's 102 counties. Our 305,000 electric customers live in 550 communities and adjacent rural areas in central and southern Illinois. This downstate service area of 20,000 square miles is the largest geographic region served by any of the State's utilities.

Coal is the primary fuel for generating electricity at our five power plants. In fact, more than 99 percent of the electricity CIPS produced last year was fueled by coal. Of that coal, about 82 percent was mined in Illinois with the balance coming from Indiana and Kentucky.

Because of our reliance on coal, and the fact that many of this State's operating mines, as well as coal reserves, lie within our service territory, we are deeply concerned with any legislation that significantly affects the use of Illinois coal and has a major financial impact on our electric customers.

H.R. 2497, which establishes a sulfur and nitrogen emissions excise tax, is such a piece of legislation. CIPS has reviewed the provisions of this bill, which is essentially acid rain control legislation, and calculated the costs for our system.

Sulfur dioxide rates were based on actual 1986 coal burn tonnage at our five plants in conjunction with the annual average coal parameters, percent sulfur (Btu per pound) for those coals. Nitrogen oxide rates were calculated using the same actual 1986 tonnage and coal heating rate values (Btu per pound) with USEPA guideline NO_x emission factors.

Our analysis shows the following for annual costs once the tax is phased in at 100 percent—using 1986 emission rates: The NO_x portion of the tax would be $36,012,863 and the SO_2 portion would amount to $189,263,550 for a total tax per year of $225,276,413. This tax represents 45 percent of our electric revenues generated in 1986, and 36 percent of our total, gas and electric, revenues for 1986.

It is interesting to note that our newest power station, Newton, would still pay a tax of about $6.5 million per year, based on 1986 operations. This despite the fact that over $121 million was spent in capital costs on the Newton Unit 1 scrubber and almost $10 million is spent annually on operations and maintenance for the scrubber. In addition, unit 2 already uses a low sulfur compliance coal.

In order to reduce CIPS' potential tax bill, it would become necessary to install additional pollution control equipment, or switch to low sulfur coal, at all of our power plants.

Because of physical constraints at our three older river stations, placement of a scrubber, as well as a landfill to be used for scrubber sludge disposal, would be extremely difficult if not impossible.

In assessing previous acid rain legislation for our four older plants, we have considered the remaining life of each unit, physical constraints, and cost effectiveness of scrubbing versus fuel switching.

The selected compliance strategy, which dealt with SO_2 emissions only, resulted in a first-year rate increase of 24 percent. This included installation of a scrubber at Coffeen and use of low sulfur coal at the three other pre-NSPS plants.

NO_x emissions could conceivably be reduced on some boilers by burner modifications, but on cyclone boilers such as at our Coffeen Station, which are higher NO_x emitters, a control technology such as Selective Catalytic Reduction would have to be employed to reduce the emission rate, and thus the tax rate.

Previous studies conducted by CIPS using Electric Power Research Institute retrofit cost guidelines estimated the capital cost of NO_x control at $85 million for SCR installation at Coffeen and another $7 million for burner modification at the three older plants.

By complying with H.R. 2497, the choices facing CIPS and its customers are not pleasant: do nothing and face a staggering annual tax bill which amounts to over 45 percent of our total annual electric revenues, thus necessitating a huge rate increase to recover those lost revenues; or install expensive control equipment--also resulting in large rate increases—and switch to low sulfur coal, thus displacing millions of tons of Illinois coal, forcing the unemployment of thousands of miners.

It does not appear that CIPS customers are willing to support additional controls or their costs. Central Surveys, Inc., conducted the annual systemwide opinion survey by asking a representative sample of CIPS customers their views about acid rain.

Only 18 percent of our customers believe immediate action requiring control measures should be taken by Congress. As for costs, fewer than 9 percent were willing to pay $5 or more per month to further reduce sulfur dioxide emissions. Keep in mind that the average annual income per household in our service area is approximately $16,000.

And these expenditures lead to what end? To end the so-called acid rain crisis? CIPS does not believe at this time that the extent and nature of current scientific evidence warrants any control program, or tax program, especially one causing any rate increase for our customers.

The premise that this and other acid rain legislation is based on, that reductions in sulfur dioxide and nitrogen oxide emissions will reduce acid deposition and its effects, is not supported by existing scientific knowledge.

Therefore, it seems reasonable that time is needed to determine what actually causes acid rain and what methods are most economical to control it.

Existing regulations presently provide adequate and substantial control for reduction of sulfur dioxide and nitrogen oxide emissions. Despite an increase in coal use, national SO_2 emissions have been reduced from almost 29 million tons in 1973 to under 21 million tons per year.

This trend is also apparent in Illinois where there was a 36 percent reduction in SO_2 emissions during 1970 to 1980 by the four largest Illinois utilities. The four largest Illinois utilities are expecting an additional 13 percent SO_2 reduction during the 1980 to 1990 period.

The Clean Coal Technology program enacted by Congress in 1985 is envisioned to allow the development and use of emerging technologies which will allow continued use of high sulfur coal and improved emission controls at reasonable costs.

Pursuit of this approach, and continued use of the current effective Federal air programs, CIPS believes, is the most appropriate course of action to take while scientific research continues.

In summary, CIPS strongly believes that H.R. 2497, as well as any costly acid rain legislation, is technically unjustifiable and would impose an unreasonable cost burden to CIPS customers as well as the Illinois coal economy.

Until research is completed, it is far too early for responsible people to suggest that the feared consequences of acid rain are wholly unreal and will never be proven. But it is also too early to resort to the proposed costly corrective strategies, such as H.R. 2497, without evidence of their need and probable effectiveness.

Thank you very much for this chance to share with you our thoughts on this matter, Mr. Chairman.

Mr. PEASE. Thank you, Mr. Grant. We appreciate your testimony.

[The statement of Mr. Grant follows:]

TESTIMONY OF RICHARD J. GRANT
CENTRAL ILLINOIS PUBLIC SERVICE COMPANY
U.S. HOUSE OF REPRESENTATIVES COMMITTEE ON WAYS AND MEANS
H.R. 2497, THE SULFUR AND NITROGEN EMISSIONS TAX ACT OF 1987

Washington, D.C.
September 9, 1987

Good morning. I'm Richard J. Grant, Manager of the Environmental Affairs Department for Central Illinois Public Service Company (CIPS). We thank you for allowing us to present our views on the proposed sulfur and nitrogen emissions tax legislation, House Bill 2497.

CIPS is an electric and natural gas utility operating in 65 of the State's 102 counties. Our 305,000 electric customers live in 550 communities and adjacent rural areas in central and southern Illinois. This downstate service area of 20,000 square miles is the largest geographic region served by any of the State's utilities.

Coal is the primary fuel for generating electricity at our five power plants. In fact, more than 99 percent of the electricity CIPS produced last year was fueled by coal. Of that coal, about 82 percent was mined in Illinois with the balance coming from Indiana and Kentucky.

Because of our reliance on coal, and the fact that many of this State's operating mines, as well as coal reserves, lie within our service territory, we are deeply concerned with any legislation that significantly affects the use of Illinois coal and has a major financial impact on our electric customers.

House Bill 2497, which establishes a sulfur and nitrogen emissions excise tax, is such a piece of legislation. CIPS has reviewed the provisions of this bill, which is essentially acid rain control legislation, and calculated the costs for our system. Sulfur dioxide rates were based on actual 1986 coal burn tonnage at our five plants in conjunction with the annual average coal parameters (percent sulfur, Btu/lb.) for those coals. Nitrogen oxide rates were calculated using the same actual 1986 tonnage and coal heating rate values (Btu/lb.) with USEPA guideline NO_x emission factors.

Our analysis shows the following for annual costs once the tax is phased in at 100 percent (using 1986 emission rates): The NO_x portion of the tax would be $36,012,863 and the SO_2 portion would amount to $189,263,550 for a total tax per year of $225,276,413. This tax represents 45 percent of our electric revenues generated in 1986, and 36 percent of our total (gas and electric) revenues for 1986.

It is interesting to note that our newest power station, Newton, which is subject to and in compliance with the stringent SO_2 and NO_x emission limits as set forth in the New Source Performance Standards dictated by the Clean Air Act, would still pay a tax of about $6.5 million per year (based on 1986 operations). This despite the fact that over $121 million was spent in capital costs on the Newton Unit 1 scrubber and almost $10 million is spent annually on operations and maintenance for the scrubber. In addition, Unit 2 already uses a low sulfur compliance coal.

In order to reduce CIPS' potential tax bill it would become necessary to install additional pollution control equipment, or switch to low sulfur coal, at all of our power plants.

Because of physical constraints at our three older river stations, placement of a scrubber, as well as a landfill to be used for scrubber sludge disposal, would be extremely difficult if not impossible. Any retrofit, if possible at all, at these plants would be extremely expensive.

In assessing previous acid rain legislation for our four older plants we have considered the remaining life of each unit, physical constraints, and cost effectiveness of scrubbing versus fuel switching. The selected compliance strategy, which dealt with SO_2 emissions only, resulted in a first year rate increase of 24 percent. This included installation of a scrubber at Coffeen and use of low sulfur coal at the three other pre-NSPS plants. Because it is unlikely that emissions from low sulfur coal would be below the 0.6 lb./MBtu cutoff as dictated in H.R. 2497, there would still be some tax to pay on units within the system. In fact, if all boilers were reduced to below 1.2 lb./MBtu, the level which our two new sources are currently subject to, CIPS would still have an annual tax of over $14 million on SO_2 alone (assuming 1986 coal usage and an average emission rate of 0.95 lb./MBtu).

NO_x emissions could conceivably be reduced on some boilers by burner modifications, but on cyclone boilers such as at our Coffeen Station, which are higher NO_x emitters, a control technology such as Selective Catalytic Reduction (SCR) would have to be employed to reduce the emission rate (and thus the tax rate). Previous studies conducted by CIPS using Electric Power Research Institute (EPRI) retrofit cost guidelines estimated the capital cost of NO_x control at $85 million for SCR installation at Coffeen and another $7 million for burner modification at the three older plants. Added to this would be the cost of annual operation and maintenance for the SCR - almost $1 million.

By complying with H.R. 2497, the choices facing CIPS and its customers are not pleasant: do nothing and face a staggering annual tax bill which amounts to over 45 percent of our total annual electric revenues, thus necessitating a huge rate increase to recover those lost revenues; or install expensive control equipment - also resulting in large rate increases - and switch to low sulfur coal, thus displacing millions of tons of Illinois coal, forcing the unemployment of thousands of miners and disruption of lives, much of which will occur in our service territory.

It does not appear that CIPS customers are willing to support additional controls or their costs. Central Surveys, Inc., of Shenandoah, Iowa, conducted the annual System-Wide Opinion Survey by asking a representative sample of CIPS customers their views about acid rain. Only 18 percent of our customers believe immediate action requiring control measures should be taken by Congress. The majority, 59 percent, believe more research should be conducted to determine the causes and effects of acid rain before any corrective action is taken. As for costs, fewer than 9 percent were willing to pay $5 or more per month to further reduce sulfur dioxide emissions. Keep in mind that the average annual income per household in our service area is approximately $16,000.

And these expenditures lead to what end? To end the so-called acid rain crisis? CIPS does not believe at this time that the extent and nature of current scientific evidence warrants any control program, or tax program, especially one causing any rate increase for our customers.

The premise that this and other acid rain legislation is based on, that reductions in sulfur dioxide and nitrogen oxide emissions will reduce acid deposition and its effects, is not supported by existing scientific knowledge. Therefore it seems reasonable that time is needed to determine what actually causes acid rain and what methods are most economical to control it.

Existing regulations presently provide adequate and substantial control for reduction of sulfur dioxide and nitrogen oxide emissions. Despite an increase in coal use, national SO_2 emissions have been reduced from almost 29 million tons in 1973 to under 21 million tons/year. This trend is also apparent in Illinois where there was a 36 percent reduction in SO_2 emissions during 1970 - 1980 by the four largest Illinois utilities. The four largest Illinois utilities are expecting an additional 13 percent SO_2 reduction during the 1980 - 1990 period.

Some of the existing federal programs include: The National Ambient Air Quality Standards, the New Source Performance Standards, Prevention of Significant Deterioration, Best Available Control Technology, and the State Implementation Plans. These programs have provided for consistent, long-term management of reduction of SO_2 and NO_x emission levels in the United States.

In addition, the Clean Coal Technology program enacted by Congress in 1985 is envisioned to allow the development and use of emerging technologies which will allow continued use of high sulfur coal and improved emission controls at reasonable costs. Pursuit of this approach, and continued use of the current effective federal air programs, CIPS believes, is the most appropriate course of action to take while scientific research continues.

In summary, CIPS strongly believes that H.R. 2497, as well as any costly acid rain legislation, is technically unjustifiable and would impose an unreasonable cost burden to CIPS customers as well as the Illinois coal economy.

Until research is completed. it is far too early for responsible people to suggest that the feared consequences of acid rain are wholly unreal and will never be proven. But it is also too early to resort to the proposed costly corrective strategies, such as H.R. 2497, without evidence of their need and probably effectiveness.

Mr. **Pease**. Next is Mr. Paul Huard, vice president of taxation and fiscal policy, National Association of Manufacturers.

STATEMENT OF PAUL R. HUARD, VICE PRESIDENT, TAXATION AND FISCAL POLICY DEPARTMENT, NATIONAL ASSOCIATION OF MANUFACTURERS

Mr. **Huard**. Thank you very much.

We are pleased to be here on behalf of our 13,500 members who account for approximately 85 percent of U.S. manufacturing employment.

NAM is opposed in principle to selective, sector-specific taxes on the grounds that they create distortions by disproportionately penalizing certain industries, and therefore opposes the Sulfur and Nitrogen Emissions Tax Act.

At a time when the manufacturing sector is still adjusting to the increased tax liability and added complexity stemming from the 1986 Tax Reform Act, it is particularly unwise to burden this sector of the economy with yet another complicated tax increase.

This is especially true for capital intensive industries, like heavy manufacturing and public utilities, that have borne much of the burden of tax reform, and would bear nearly all of the burden of the Sulfur and Nitrogen Emissions Tax Act.

Proponents of this tax bill argue that it is a non-regulatory approach that will be less costly and require less government bureaucracy than conventional regulatory methods.

However, we believe that the compliance, enforcement, auditing, and litigation costs associated with implementing this proposal could prove to be comparable to those of a traditional regulatory approach to pollution control.

In addition to tax policy considerations, NAM feels strongly that the acid rain problem must be considered within the context of a debate on overall national energy policy. Coal is our most abundant energy resource. We have enough coal reserves to last hundreds of years.

Equally important, these domestic reserves are not subject to foreign influences on control. More than 50 percent of the Nation's electricity is generated by burning coal and manufacturing is the largest single consumer of electricity.

Accordingly, a major portion of the proposed emissions taxes will lead directly to increased operating costs of producing manufactured goods, thus reducing both productivity and competitiveness.

Furthermore, NAM believes that the Clean Air Act and the resulting trend toward clean coal technology is the best approach for decreasing sulfur dioxide and nitrogen oxide emissions.

Since the passage of the CAA, the United States has spent over $75 billion to control such emissions.

Now almost all counties in the United States, 98 percent, meet health-based standards for sulfur dioxide and nitrogen oxides.

Total sulfur dioxide emissions have declined 28 percent and nitrogen oxide emissions are down 10 percent.

The NAM is committed to the continued development of clean coal technology aimed at a further steady decrease in these emissions.

Finally, NAM has conducted long-term econometric simulations of various acid rain control bills in order to assess their effect on the economy. On a cumulative basis, acid rain legislation causes serious and lasting damage to the economy, falling primarily on residential and industrial electric ratepayers, and on the housing and manufacturing industries. Since money is essentially a fungible commodity, we believe similar results would flow from the tax burdens imposed by this bill.

That concludes my summary. I will be glad to address any questions.

Mr. PEASE. Thank you.

[The statement of Mr. Huard follows:]

TESTIMONY OF PAUL R. HUARD
VICE PRESIDENT, TAXATION AND FISCAL POLICY DEPARTMENT
NATIONAL ASSOCIATION OF MANUFACTURERS

BEFORE THE
COMMITTEE ON WAYS AND MEANS
U.S. HOUSE OF REPRESENTATIVES

ON H.R. 2498
THE SULFUR AND NITROGEN EMISSIONS TAX ACT

SEPTEMBER 9, 1987

1. General Criticisms

On behalf of our members, we welcome the opportunity to present our views on H.R. 2498, the Sulfur and Nitrogen Emissions Tax Act. In principle, NAM is opposed to selective, sector-specific taxes on the grounds that they create distortions by disproportionately penalizing certain industries. On this general principle, NAM would not endorse taxes on utilities and manufacturing industries that emit sulfur dioxide (SO_2) and nitrogen oxides (NOx).

Various proposed pollution taxes have been considered by NAM over the past several years, leading to adoption of the following policy position: "Taxes on effluents and emissions represent an unmanageable, uneconomic, negative approach and, in principle, allow polluters to continue to adversely use our environment by payment of a tax. Those who comply with environmental standards should not be required to pay such a tax, and those who do not comply should not be excused by tax payment."

At a time when the manufacturing community is still adjusting to the increased tax liability and added complexity stemming from the 1986 Tax Reform Act, it is particularly unwise to burden this sector of the economy with yet another complicated and costly tax increase. This is especially true for capital-intensive industries, like heavy manufacturing and public utilities, that have borne much of the burden of tax reform, and would bear nearly all of the burden of the Sulfur and Nitrogen Emissions Tax Act.

According to the Joint Committee on Taxation, a sulfur and nitrogen emission tax similar to that in H.R. 2498 would raise $19 billion dollars over three years. This will only increase the growing disparity between corporate and individual tax burdens. It is estimated that in the current fiscal year, the federal government will collect $105 billion in corporate taxes on total corporate profits of about $320 billion, and $364 billion in individual taxes on total personal income of about $3.7 billion. This translates into an effective tax rate for corporations that is around triple that of individuals (in approximate terms, 32% vs. 10%). This unwarranted disparity needs no further aggravation.

The authors of the bill have argued that taxation is a non-regulatory approach to pollution control, and would be less expensive than conventional regulatory methods because it will not require maintaining extensive new government bureaucracies. NAM believes this is not the case. Instead it would merely shift the burden of regulatory oversight from the EPA to the IRS. The enforcement of a tax on emissions would be extremely costly, since it would require the installation of monitoring equipment on utilities and factories throughout the country. Moreover, industry compliance costs and IRS auditing costs--not to mention additional government and taxpayer expenses if litigation were involved--would only serve to channel resources away from the development of clean coal technology. Enforcing the tax would require the construction of an extensive bureaucracy, quite possibly equalling that likely to be associated with a regulatory approach.

2. Energy Policy Considerations

In addition to tax policy considerations, the NAM feels strongly that the "acid rain" problem should be considered in the context of a comprehensive debate on our national energy policy. Coal is our most abundant energy resource. We have enough coal reserves to last hundreds of years, and unlike other energy sources they are not subject to national security contingencies.

Equally important, these domestic reserves are not vulnerable to foreign influences such as cartels, embargoes or exhorbitant price increases.

More than 50% of the nation's electricity is generated by burning coal, and manufacturing is the largest single consumer of electricity. Therefore, the tax increases proposed in H.R. 2498 will translate into higher energy costs and, ultimately, increased operating costs of producing manufactured goods.

3. The Clean Air Act and Clean Coal Technology

In 1970 the Congress responded to air quality problems by passing the Federal Air Pollution Control Act, now known as the Clean Air Act (CAA). As a result of this Act, which imposed strict controls on air quality standards, SO_2 and NOx emissions have declined steadily. Since passage of the CAA, over $75 billion has been spent to control SO_2 and NOx. Almost all counties in the U.S. (98%) meet health-based standards for SO_2 and NOx. Total U.S. SO_2 emissions have declined 28% and NOx emissions are down 10%. The CAA is working and Congress should not impose additional economic burdens on industries which have already taken significant strides to reduce SO_2 and NOx emissions.

The NAM is committed to the continued development of clean coal technology aimed at steadily decreasing the level of SO_2 and NOx emissions. To do so, the NAM supports emphasizing efforts to: (a) accelerate funding for and interpretation of research to establish a greater understanding of the causes and effects of acid rain; (b) conduct experimental programs for mitigating certain short-term effects of acid rain, and 3) accelerate broadly based technology, research, development and demonstration for reducing long-term problems as appropriate.

4. Macroeconomic Implications

In addition to these broad, conceptual arguments against the emissions tax, NAM has recently conducted an extensive econometric analysis of various acid rain control bills in order to gauge the cost to the economy associated with this type of legislation.

On a cumulative basis, acid rain legislation of the regulatory type would cause serious and lasting damage to the economy. The causes of this damage have to do primarily with the effects of higher energy costs. (Specifically, full implementation of the regulatory approach could result in industrial electricity prices increasing 15% above a baseline predicated if no legislation were enacted.) The predicted effects are as follows.

First, since energy is an important input to production and a major component of production costs, there are severe output losses and reductions in employment in the energy-intensive sectors. The most adverse impacts are in durable manufacturing and metals industries. Second, because energy prices feed through into final product prices, there are increases both in retail energy costs and in the overall inflation rate. Third, because of higher inflation rates, interest rates increase, causing a major decline in housing starts. GNP growth is lower than it otherwise would be; unemployment and the federal fiscal deficit are both higher.

Since money is essentially fungible, we believe similar results would pertain under the approach taken in H.R. 2498. We anticipate that the full study will be published and released next month, and will submit a copy for the record of this hearing.

5. Conclusions

This type of legislation is not just air quality control but carries with it severe economic impacts. Its implementation would result in dislocations within the manufacturing community--in terms of labor, plant locations, industrial growth, productivity and international trade competitiveness--that would further weaken our manufacturing base. U.S. industry has come a long way in controlling air emissions from both manufacturing and power-generating facilities. There is also a strong commitment to continue adopting and improving the clean coal technology. This legislation, which would impose targeted and devastating tax burdens on the industrial sector as well as generally weakening the national economy, should be rejected.

Mr. PEASE. Our final witness will be James F. Collins, president, National Steel Producers Association.

STATEMENT OF JAMES F. COLLINS, PRESIDENT, NATIONAL STEEL PRODUCERS ASSOCIATION

Mr. COLLINS. I am here today representing a trade group consisting of electric-furnace, scrap-based domestic steel companies. Our electric-furnance steel producers are competitive companies with very high productivity, low unit labor costs, and, for the most part, extremely competent hands-on management. They are able to compete successfully, worldwide, with any other market-based steel producers. Nontheless, they tread a delicate balance between success and failure, which, of course, is the norm even among successful world steel producers. In such an environment, the electric furnace companies are able to respond effectively to new market-based challenges. What they cannot do is respond effectively to nonmarket-induced economic shocks.

H.R. 2497, which would impose a severe excise tax on emissions, is the kind of legislatively generated nonmarket shock we are describing. H.R. 2497 would sharply increase the costs to steel producers of the electricity they need to operate their electric furnaces. This bill would raise electricity costs for industrial consumers by an estimated 25 to 30 percent.

For example, one highly competitive electric furnace company pays $1.4 million per month for electricity. A 30 percent increase would cost that company an additional $420,000 monthly. Annually, that adds up to approximately 60 percent of the company's aftertax income. Does the Congress really wish to distort the economics of electric furnace steelmaking by inflicting this kind of economic shock on as many as 60 or so electric furnace steel-producing companies in the United States?

With this legislation, in one fell swoop, you will have changed the economics of our industry. One piece of legislation will change our position from companies among the most competitive steel producers in the world, to those barely hanging on.

Why should the Congress, which has acted legislatively due to its concern about the future of the American steel industry, wish to take such a draconian step at this point in time?

Instead, the Congress should address the economic impact of H.R. 2497. We believe you will find that the jobs lost due to this bill in coal mining communities, in steel and in other manufacturing industries are not worth the benefits attained.

Emission fees, in effect, are user charges. They are an environmental policy approach which the Congress has previously considered and rejected. As an alternative to standard-setting, they are a poor precedent since little is understood about their secondary effects on industries and upon Federal tax revenues.

Clearly, substantial losses in Federal tax revenues will occur if taxable operating income of the electric utilities, the mining companies, the steel companies and other industries affected is reduced, due to the high cost of new emission taxes.

In addition, the States and the Federal Government will incur additional costs due to payments to workers who have lost their jobs as a result of these taxes.

And what about our international trade balance? Certainly major emission taxes of this kind will diminish the ability of electric furnace steel producers to continue their effective competition with imports.

I certainly do not mean to minimize the problem of acid rain. It is a considerable economic and social cost to our economy and a problem which must be solved. But a fair case can be made that if stringent new taxes force the electric utility industry to achieve additional near-term emissions reductions, they would either switch fuels or install additional scrubbers.

Fuel switching would disrupt the coal industry. Additional scrubbers will increase costs which will be passed on to industrial and residential consumers.

The cost of air pollution control according to the Council on Environmental Quality is about $29 billion annually. When clean coal technology may be only a few short years from fruition, does the Congress, by enacting H.R. 2497, really wish to impose an additional $15 billion of annual costs on the U.S. economy?

About two-thirds of these costs would be borne by companies in nine States, including Ohio, Indiana, Pennsylvania, Illinois, Missouri, Georgia, West Virginia, Tennessee, and Kentucky.

Moreover, the Congress should not assume that emission taxes will be a net revenue raiser. The reverse will probably be true.

Accordingly, we respectfully urge the committee to reject H.R. 2497, as both unsound tax policy, and dubious environmental policy.

I would add, Mr. Chairman, that imposing $15 billion of additional air pollution control costs on the $29 billion the U.S. economy is already absorbing at a time when the outlook of the U.S. economy is uncertain at best due to a massive budget and trade imbalance deficit, is in our judgment a very unsound approach.

Thank you very much.

Mr. **Pease**. Thank you, Mr. Collins.

[The statement of Mr. Collins follows:]

STATEMENT OF JAMES F. COLLINS,

PRESIDENT, NATIONAL STEEL PRODUCERS ASSOCIATION

Mr. Chairman and Members of the Committee: I am James Collins, President of the National Steel Producers Association, a trade group which represents electric-furnace, scrap-based domestic steel producers. Our electric-furnace steel producers are competitive companies with very high productivity, low unit labor costs, and, for the most part, extremely competent hands-on management. They are able to compete successfully, world-wide, with any other market-based steel producers. Nonetheless, they tread a delicate balance between success and failure, which, of course, is the norm even among successful steel world producers. In such an environment, the electric furnace companies are able to respond effectively to new market-based challenges. What they cannot do is respond effectively to non-market induced economic shocks.

HR 2497, which would impose a severe excise tax on emissions, is the kind of legislatively generated non-market shock we are describing. HR 2497 would sharply increase the costs to steel producers of the electricity they need to operate their electric furnaces. This bill would raise electricity costs for industrial consumers by an estimated 25% to 30%. One highly competitive electric furnace company, for example, pays $1.4 million per month for electricity. A thirty percent increase would cost that company an additional $420,000 monthly. Annually, that adds up to approximately 60% of the company's after-tax income. Does the Congress really wish to distort the economics of electric furnace steel-making by inflicting this kind of economic shock on as many as sixty or so electric furnace steel producing companies in the United States?

With this legislation, in one fell swoop, you will have changed the economics of our industry. One piece of legislation will change our position from companies among the most competitive steel producers in the world, to those barely hanging on. Why should the Congress, which has acted legislatively due to its concern about the future of the American steel industry, wish to take such a draconian step at this point in time. Instead the Congress should assess the economic impact of HR 2497. We believe you will find that the jobs lost in coal mining communities, in steel and in other manufacturing industries due to this bill are not worth the benefits attained.

Emission fees, in effect, are user charges. They are an environmental policy approach which the Congress has previously considered and rejected. As an alternative to standard-setting, they are a poor precedent since little is understood about their secondary effects on industries and upon the federal tax base. Clearly, substantial losses in federal tax revenues will occur if taxable operating income of the electric utilities, mining companies, steel companies and other industries is reduced due to the high cost of new emission taxes. In addition, the states and the federal government will incur additional costs due to payments to workers who have lost their jobs as a result of these taxes. And what about our international trade balance? Certainly major emission taxes of this kind will diminish the ability of electric furnace steel producers to continue their effective competition with imports.

I do not mean to minimize the problem of acid rain. It is a considerable economic and social cost to our economy and a problem which must be solved. But a fair case can be made that if stringent new taxes force the electric utility industry to achieve additional near term emissions reductions, they would either switch fuels or install additional scrubbers. Fuel switching would disrupt the coal industry.Additional scrubbers will increase costs which will be passed on to industrial and residential consumers.

The cost of air pollution control according to the CEQ, is $29 billion annually. When clean coal technology may be only a few short years from fruition, does the Congress really wish to impose an additional $15 billion dollars of annual costs on the U.S. economy? About two-thirds of these costs would be borne by companies in nine states including Ohio, Indiana, Pennsylvania, Illinois, Missouri, Georgia, West Virginia, Tennessee and Kentucky.

Moreover, the Congress should not assume that emission taxes will be a net revenue raiser. The reverse will probably be true.

Accordingly, we respectfully urge the Committee to reject HR 2497, as both unsound tax policy, and dubious environmental policy.

Mr. **Pease**. Before I call on my friend from Tennessee to ask questions, I note that, Mr. Glauthier, you are on a roll today.

With the exception of Mr. Gregg, the Members present represent States that would be impacted first, second and third in terms of costs per capita by this bill.

I think you probably found a fairly attentive audience for your presentation.

Mr. Duncan.

Mr. **Duncan**. Thank you, Mr. Chairman, and I thank the panel. It has been a very good one.

In Tennessee, we have a lot of counties that have the purest air in the world. However, there are no jobs and people are leaving to get a job so I think we have to relate what we do with employment opportunities in this country. Perhaps Mr. Rogers said that this bill would actually result in a net revenue loss.

Could you explain that? Was that you, Mr. Rogers?

Mr. **Rogers**. Yes, I could do so in simplistic terms, because I am not a tax expert.

The funds paid in in response to that, this tax, would go into trust funds which would be disbursed. They would not be used as general revenue funds of the country.

Beyond that, it is further my understanding that we as payors of this tax would be given the usual deduction of this as a business expense. It might be said beyond that in reply, "Well, you will just raise rates, won't you?" We would assume that there would be a passthrough, we would hope a one-for-one passthrough, but that increase, that passthrough, would go to all of our customers; but our commercial and industrial customers, people such as the members of Mr. Collins' association, would likewise treat that increase as a business expense deduction. So we would estimate that this well could end up in a net revenue loss.

Mr. **Duncan**. Would other members care to comment on that statement?

Apparently not.

That is all I have and thank you again.

Thank you, Mr. Chairman.

Mr. **Pease**. Mr. Jacobs.

Mr. **Jacobs**. No questions.

Mr. **Pease**. Mr. Gregg.

Mr. **Gregg**. Mr. Glauthier, I wonder in getting to your figures did you use a static model? Do you presume any reaction from people as a result of the tax?

Mr. **Glauthier**. We have evaluated the magnitude of the taxes that would be levied according to the bill and have not had an opportunity to conduct a full evaluation of exactly what might be done in response to that.

Mr. **Gregg**. In other words, you used a static model?

Mr. **Glauthier**. Yes.

Mr. **Gregg**. Did you calculate in the tax credit, in the amount?

Mr. **Glauthier**. That does not come into play at this first stage where we are just looking at how much revenue this tax itself would raise or how much of a burden it would impose.

Mr. Gregg. So you didn't account for the tax. Did you account for the recycling that would occur in the trust fund and the forgiveness of those loans, which would turn into grants?

Mr. Glauthier. You are referring to the provision under 2498?

Mr. Gregg. Right.

Mr. Glauthier. No. We haven't carried out that analysis. We are not sure exactly how that would be done under this bill, 2497.

Mr. Gregg. Well, basically then you took an analysis which said this is what the tax will be and didn't consider the bill with the credit, didn't consider the trust fund rebate, or basically forgiveness situation for the costs that might be incurred, and didn't factor in the whole theory behind the tax, which is the economic incentive to create reduction and thus reduce the tax.

So I don't know—they are nice numbers, they are big numbers and I am sure they serve the purpose of reflecting the policy position of the people that you represent, but I think when we come to distortions you might want to say that they are distorted because of the fact that they don't account for the basic theorem of the tax which is that the tax would go down because reaction would occur in the marketplace.

Specifically, in the near term you would see coal switching in a number of industries. I was interested in the NAM study also.

To what extent in the study did you consider in reaching your balance of economic costs regarding health impacts? Did you account at all for the American Lung Association position in your study? This $40 billion of annual costs?

Mr. Huard. The honest answer is I don't know. I can find out and submit a response for the record, but on that particular issue, I don't know.

[The following was subsequently received:]

The study did not specifically take health care costs into consideration, since these cannot be easily represented in the DRI model except by approximations which are likely to be inaccurate. This does not represent an effort on our part to evade the issue; rather, we made every possible effort to make the simulations realistic, subject to the limitations of the software.

The impact of health care costs on the economy is in general twofold. First, there will be a shift in the sectoral allocation of consumption spending toward medical services. This does not imply any diminution in GNP growth, since all that is taking place is a reallocation of expenditure. Second, there will be some net costs in terms of worker disability and higher insurance rates. However, these are relatively small in relation to the output losses engendered by the acid rain controls themselves. In terms of how these costs should be interpreted, they would not affect the deviation from the baseline, which is shown in the study, but they would imply that the baseline path of the economy would be somewhat less favorable than if they are not taken into consideration.

For further information on the inputs to the DRI model and the structure of the model, let me refer you to Appendices I and III in the NAM study "Acid Rain Legislation and the Economy". Considerable detail is provided as to the exact inputs used in the model simulations.

Mr. Gregg. Do you know if you accounted for the visibility issue which EPA talked about, which is $3 to $7 billion of cost to the economy?

Mr. Huard. Well, what we did was use the—again I will have to confess I am a tax attorney by training and not burdened with an economic or statistical education—and we used the data resources model which I understand is fairly objective.

We tried to simulate the effect of things like the credit and other things by having both high-, medium- and low-end responses so that even if the tax burden goes down significantly, even the low-end response showed significant losses, permanent losses in GNP growth and employment throughout the balance of the century and the other effects.

Mr. **Gregg**. I understand that. I guess my question is what were the factors in that? I wish you would get back to me and tell me whether or not you factored in the health costs, the figures proposed by the American Lung Association, the EPA costs in visibility, Academy of National Science costs on general loss to the environment, which is $7 billion in specific loss in addition to that to buildings of $2 billion, and how that factors into those numbers if at all.

Thank you. I yield back.

Mr. **Pease**. Thank you, Mr. Gregg.

Mr. Rogers, I think it might be well for you to review for the committee what your own company is doing to find alternative ways of burning high sulfur coal without pollution.

I am aware that you have a generating plant in my district where you are going to have a ceremony in about 2 weeks.

Could you tell us about that?

Mr. **Rogers**. Yes, sir. That is just one of a spectrum of activities that Ohio Edison has been involved in in the area of pollution control. If I can go back just a little bit beyond the LIMB project, which is the one that you refer to, Ohio Edison has invested some billion and a half dollars over the past years in pollution control equipment.

We have been deeply involved in a $450 million project at our plant down in the Ohio Valley. We installed some of the earliest base load generation scrubbers at our Mansfield plant in Shippingport, Pa., the basis for the statement in my testimony that we do have experience with scrubbers and I think we know their problems.

The limestone injection multi-stage burner program at the Edgewater plant in Lorain, Ohio, is part of our program pursuing a clean coal technology research that we in our industry believe is the right way to find solutions to both the SO_2 and the NO_x problems that we are talking about here today.

The LIMB project is a joint project between ourselves, the State of Ohio, Babcock and Wilcox. We all have investments in it in one way or the other. Whether it is a final answer, we don't know.

There are fluidized bed projects as well, a whole spectrum taking place within our industry that we would strongly urge the Congress to take into account, and look to the results of those programs which we think will solve the problems, and we hope to see you in Lorain.

Mr. **Pease**. Thank you very much.

I think this concludes our hearing. I would like to thank all of our witnesses for appearing this afternoon and the Chair declares this hearing concluded.

[Whereupon, at 2:25 p.m., the hearing was adjourned.]

[Submissions for the record follow:]

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September 21, 1987

Honorable Dan Rostenkowski
Chairman
Committee on Ways and Means
House of Representative
Washington, D.C. 20515-1308

Dear Mr. Chairman:

Please include the enclosed Statement and Attachments on H.R. 2497 and H.R. 2498 in the record of the hearing which you held on September 9, 1987 on those bills. This testimony on behalf of the Aluminum Association, Inc. states our strong opposition to proposed acid rain control measures.

Even though the bills, H.R. 2497 and H.R. 2498 are couched in terms of revenue legislation, they would impose stringent SO_2 and NOX control on fossil fuel burning utilities. For the aluminum industry electricity is an essential and indispensible part of the process for producing metal.

Acid rain in many respects is more an electricity policy issue than it is an environmental issue. It has been the contention of the affected members of the Aluminum Association that the solution to acid rain - the environmental problem - must also address the problem of acid rain - the energy policy issue - or we will merely exchange the environmental concern of one region for the energy policy disaster of another.

The legislative solutions which H.R. 2497 and H.R. 2498 offer would result in a selective and disproportionate burden being placed on a certain few energy intensive industries.

The members of the Aluminum Association urge your committee not to report any legislation which purports to address the acid rain "problem" which does not effectively address the equally important subject of electricity policy. Taxing those who use electricity does not constitute a solution but is merely an exacerbation of an already existing problem for U.S. industry in international competition.

Thank you for enabling us to participate in the Ways and Means Committee's consideration of these measures.

Sincerely,

M Barry Meyer

M. Barry Meyer
Vice President
Government Relations

MBM:rmf

Enclosures/Attachments

Mr. Chairman and Members of the Committee:

This statement in opposition to H.R. 2497 and H.R.. 2498, the two versions of the "Sulfur and Nitrogen Emission Tax Act of 1987" is presented on behalf of the Aluminum Association, Inc. The members of the Association represent most of the United States producers of primary aluminum ingot. Association members also account for 85% of the shipments of aluminum mill products in this country.

The Aluminum Industry Position on Acid Rain Legislation

The aluminum industry is deeply concerned over the potential impact of proposed acid rain legislation under consideration by the Congress. We continue to oppose the enactment of any of the legislative proposals pending before this and other committees of jurisdiction. H.R. 2497 and H.R. 2498 are acid rain control measures, even though they use a revenue approach. The emission standards they would require are much more stringent than those of H.R. 2666, or even the acid rain control measure approved by the Senate Subcommittee on Environmental Protection. We have testified extensively before the Congress as to the potential severe adverse impact which cost increases of this magnitude would have on the U.S. aluminum industry, the proposed acid rain control tax program involves serious economic and energy issues - with the potential of inflicting severe damage on the United States aluminum production capacity.

The measures concentrate the burdens unfairly on selected areas of the country; penalize major industrial users of electricity, such as the aluminum industry; and jeopardize the continued survival of significant portions of the nation's vital domestic aluminum production industry which competes with foreign producers in the U.S. and foreign markets.

Statement of the Issue

Acid rain has been debated for some time now as an essentially environmental issue. The questions in this debate have focused on scientific assessments and corrective methods. To the aluminum industry, however, acid rain legislation which seeks to impose costly corrective actions on electric utilities is much more than an environment issue. It is an electricity cost issue which holds the key to survival or failure for a large portion of the remaining U.S. aluminum industry.

Aluminum reduction does not cause acid rain. But it does rely, unavoidably, on electricity to energize its basic process; technologically, there is no practical alternative. When electricity rates rise, aluminum producers have only two choices: pay the higher price or shut down production.

Our industry has already suffered 9 plant shutdowns primarily because national and state ratemaking policies in this country have forced electricity costs to rise to artificially high levels compared with the rest of the world. These closures have resulted in the loss of over 15,000 smelter jobs and have severely damaged the economies of the communities in which they were located. In 1984, when we first testified on acid rain legislation, the United States had 32 primary plants; today just three years later, only 23 of them are in operation.

The pending proposals could raise electricity costs prohibitively. H.R. 2497 and H.R. 2498 would impose a tax based on the amounts of Sulfur Dioxide and Nitrogen Oxide emitted from a boiler for each million Btu's produced. The tax for each pollutant would range from 15 cents to 45 cents per pollutant pound per million Btu's for SO_2 and from 10 cents to 45 cents for NOX. The tax would significantly increase the cost of electricity from those boilers burning fossil fuels to supply electricity to 10 aluminum reduction facilities located in the East, mid-West and South.

These 10 plants currently produce approximately 1,925,000 tons of aluminum. They would experience an estimated aggregate cost increase for the SO_2 portion of the tax alone of $366,000,000 or 9.51 cents per pound of aluminum produced. The increase in the cost of producing a pound of aluminum in Indiana, Kentucky, Missouri, Ohio, Tennessee and West Virginia would be more than 11 cents to 12 cents per pound or well over 20% for just the SO_2 tax. Attachments 1 and 2 are provide the work sheets on which this assessment is made.

The impact of the proposed SO_2 tax to the United States primary aluminum industry is disastrous. If you add the NOX tax burden, at 50% of the SO_2 tax, the result is unthinkable.

It currently costs from 48¢ to 55¢ to produce aluminum in the U.S., elsewhere in the Free World the cost range is 38¢ to 50¢. Average U.S. cost is 52¢, Australia 38¢, Canada 39¢, Brazil 42¢, Norway 44¢, Germany 46¢ and France 50¢.

The issues of the aluminum industry's competitiveness and its sensitivity to electricity rate changes are addressed in testimony which we presented earlier this year on H.R. 2666 to the Subcommittee on Health and the Environment of the House Committee on Energy and Commerce and on a range of proposals before the Subcommittee on Environmental Protection of the Senate, Environment and Public Works Committee, copies of which are attached.

Conclusion

The Aluminum Association on behalf of its affected member companies strongly recommends that neither H.R. 2497 nor 2498 be reported favorably. It is our belief that the cost associated with those bills has the potential to cause severe damage to our industry.

RESPONSE BY RALPH EBERSOLE, V.P., NORANDA ALUMINUM COMPANY, TO QUESTIONS BY REP. SIKORSKI, ABOUT THE ABILITY OF THE ALUMINUM INDUSTRY TO OBTAIN AND KEEP LOW ELECTRICITY RATES:

This testimony summarizes the aluminum industry's need to purchase electric power at rates which enable U.S. aluminum companies to produce aluminum at a cost that is competitive on the world market.

HOW THE ALUMINUM INDUSTRY USES ELECTRICITY

Electricity represents roughly one-third the cost of producing aluminum. Typical non-aluminum industrial plants use electricity for electric motors. These motors drive equipment such as conveyors, stamping presses, pumps, fans, and compressors. The electricity used in an aluminum smelter is used to produce aluminum through an electro-chemical reaction. Low voltage direct current electricity provides the energy to separate aluminum oxide into oxygen and pure molten aluminum. This process operates continuously in large insulated containers called pots. A typical smelter consists of several hundred of these pots all connected to the electric system. Unlike a motor which starts and stops, the aluminum-making process is continuous — and very energy intensive.

WHY "AVERAGE" ALUMINUM RATES ARE LOWER

There are three primary reasons the electric rates paid by the aluminum industry are less than those paid by other utility customers.

1. Plant Locations. U.S. aluminum companies have traditionally — and out of economic necessity — located their smelters in areas of the United States where electricity supplies are relatively abundant and inexpensive and for years they provided the base load that made the utility viable. The rates by all users in these low-cost areas, including residential customers, are low compared to the national average. As a result, it is misleading to compare average aluminum industry electric rates with average "national" rates paid by residential customers. Aluminum smelters are deliberately located in low-cost areas; that is the only way they can produce aluminum at competitive prices. Residential, commercial and other industrial users are not bound by such geographic restrictions.

2. Power Consumption. The costs of providing electric power to aluminum plants is below the cost of serving other customers. Electricity cannot be stored. It must be used at the same instant it is generated. Thus, many utilities must build and maintain considerable standby capacity to meet peak electrical demand — most often in the late afternoon and early evening when homeowners operate appliances and heating or air conditioning systems. At other times, this expensive capacity is not utilized.

In contrast, aluminum smelters purchase power 24 hours a day, 365 days a year. With continuous consumption, utilities do not need to build and maintain facilities that stand idle during daily periods of low demand. As a result, the aluminum industry is a highly efficient and cost-effective user of electrical capacity. Its rates should, and do, reflect this efficiency.

3. Distribution Systems. Aluminum smelters do not require the vast power distribution systems utilities must build and maintain to serve their residential customers. Smelters take electricity at transmission or subtransmission voltage levels, providing their own substations and in-plant distribution systems. Any credible cost-of-service analysis will show that aluminum smelters require substantially lower transmission and distribution costs than residential customers. Power rates should and do reflect this substantially lower cost of service.

For example, in the Pacific Northwest, where approximately 40% of the industry's capacity is located, aluminum producers pay abut 23 mills/kwh for power from the Bonneville Power Administration. Residential customers pay an average of about 45 mills/kwh. In southeast Missouri, where Noranda pays an average of 26 mills/kwh, residential customers pay about 32 mills/kwh. In western Kentucky, where Big Rivers Electric Cooperative serves two primary aluminum plants, the companies represent more than 70% of the base load and pay about 26 mills/kwh. Residential customers in the region pay about 54 mills/kwh.

While all of the residential rates mentioned above are properly higher than the corresponding rates to aluminum plants, they are also well below the 80 mills/kwh national average which illustrates the first point.

THE COST OF ACID RAIN CONTROLS

The known methods of SO_2 and NO_x reduction available to utilities would increase the cost of electricity to primary aluminum plants an estimated 10 to 25%. As rate-payers, aluminum companies would see their power costs increase as a result of acid rain legislation. To do otherwise would require subsidies which are strongly opposed by state and federal regulators and the aluminum industry itself. Furthermore, the aluminum industry does not have economic leverage to avoid these rate increases. The appearance of such control is an erroneous conclusion drawn from misinterpreted average energy costs and misapplied cost-of-service comparisons.

For instance, Noranda's New Madrid, Missouri, facility uses 17% of the electricity generated by the local utility, yet we provide 20% or more of its revenue. Until very recently, many aluminum companies were paying a premium for their power relative to the actual cost of service provided by the utilities. At the same time, many aluminum companies were providing operating reserves to the utilities in the form of interruptible supply contracts, meaning the utilities can, with notice to the aluminum company, shift power from the smelter to meet residential and other customer needs. These are hardly the sort of arrangements that companies with real economic leverage would accept. Thus, it is naive to think that aluminum companies have the economic clout to avoid paying their share of the costs associated with acid rain controls.

PLANT CLOSINGS

About six years ago, the aluminum industry was purchasing power at 32 smelter locations in the United States. Since then, 4 of the 5 smelters in Louisiana and Texas have been closed because the cost of electricity made it impossible to continue to produce aluminum at competitive prices. The same cost pressures closed two plants in Arkansas, and 3 of the 4 facilities served by TVA were idled when the cost of electricity increased from 7 to 37 mills/kwh. Aluminum companies were not the only ones to suffer the effects of TVA's rate hikes. The Department of Energy closed Oak Ridge for the same reason: they could not afford the price of power.

Again, the above examples demonstrate the limited ability of either the aluminum industry or its electricity suppliers, whether investor owned or public, to absorb or offset the cost of compliance which would be imposed by HR 2666.

# # #

G77R0004

Testimony of Ralph Ebersole, on Behalf of the Aluminum Association, Inc., July 9, 1987, Before the Subcommittee on Health and Environment, Committee on Finance and Commerce, House of Representatives

My name is Ralph Ebersole, Vice President, Noranda Aluminum, Inc. I am here today to testify on behalf of the Aluminum Association, Inc., whose membership represents most of the United States producers of primary aluminum ingot. Association members also account for eighty-five percent of the shipments of aluminum mill products in this country.

The Aluminum Industry Position on Acid Rain Legislation

We in the aluminum industry are deeply concerned over the potential impact of proposed acid rain legislation under consideration by the Committee and are opposed to the enactment of H.R.2666.

We recognize that acid rain is an important environmental question. But for the aluminum industry, the proposed acid rain legislation is also a serious economic and energy issue -- with the potential of inflicting severe damage on the United States' aluminum production capacity.

H.R.2666 would place an unfair competitive burden on the U.S. primary aluminum industry. The market for aluminum is worldwide and its price is set on several commodities exchanges.

* We urge this Committee to recognize that decisions on acid rain are, at the same time, decisions about energy costs and economic impacts which require serious consideration.

* We urge you to consider the vulnerability of the U.S. aluminum industry to competition, even in our home market, from foreign producers advantaged by lower electricity costs and sometimes by government subsidy or support.

* We believe that Congress must address national policies concerning electricity generation, ratemaking, and the appropriate distribution of pollution control costs.

* In particular, we urge this Committee, in considering acid rain legislation, to seek an approach that does not concentrate the burdens unfairly on selected areas of the country; does not penalize major industrial users of electricity, such as the aluminum industry; and does not jeopardize the continued survival of significant portions of the nation's vital domestic aluminum production industry.

Statement of the Issue

Acid rain has been debated for some time now as an essentially environmental issue. The questions in this debate have focussed on scientific assessments and corrective methods. To the aluminum industry, however, acid rain legislation which seeks to impose costly corrective actions on electric utilities is much more than an environmental issue. It is an electricity cost issue which holds the key to survival or failure for a large portion of the remaining U.S. aluminum industry.

Aluminum reduction does not cause acid rain. But it does rely, unavoidably, on electricity to energize its basic process; technologically, there is no practical alternative. When electricity rates rise, aluminum producers have only two choices: pay the higher price or shut down production.

Our industry has already suffered plant shutdowns because national and state ratemaking policies in this country have forced electricity costs to artificially high levels compared with the rest of the world.

The pending proposals would push electricity costs even higher. The result might well be the increased vulnerability of a number of the remaining U.S. aluminum reduction plants. Up to half of those currently in operation will be directly affected.

Please bear in mind that acid rain is not just a North American question; western Europe faces a similar debate. But we cannot count on foreign nations to adopt the same protective measures as the United States. Many foreign countries will not adopt similar acid rain provisions, and so will spare their own electric utilities -- and aluminum smelters -- the added costs which U.S. utilities and aluminum producers would have to shoulder.

Western Europe may not match U.S. action. Instead, European governments may see U.S. acid rain legislation as a chance for them to gain competitive advantage, either by settling for less costly measures or by compensating their own aluminum industries through some form of subsidization.

In the acid rain issue, the aluminum industry is as much an innocent bystander as any other industry, business or private household that uses and depends on electricity. But we are far more economically vulnerable than most to electricity price increases. Adoption of these bills would jepardize a major portion of the U.S. aluminum industry and its ability to compete. The burden of paying for the solution to a widespread problem would press narrowly and painfully on our industry and on the states and communities where it is concentrated.

Jobs, taxes and foreign trade would be lost, and the national and local economies would suffer.

The Aluminum Industry's Vulnerability to Electricity Cost Increases

The Hall-Heroult electrolytic reduction process which separates aluminum metal from its ore was invented just over a century ago. It lowered the cost of aluminum by more than 95 percent, changing it for the first time from a semi-precious material almost as costly as silver into an abundant, useful metal inexpensive enough for pots and pans.

This aluminum smelting process requires electricity in large amounts; in fact, it was made practical only by the invention of efficient electric generators. It is not simply a matter of generating heat, as in many other metal smelting or industrial processes. Aluminum production cannot switch to some other type of energy. Electricity is an essential part of the process; there is no known practical alternative.

Energy -- mainly this electricity for smelting -- accounts for about one-third of the total cost of aluminum production.

The U.S. Commerce Department's International Trade Administration underscored the importance of this factor, in these words:

"The aluminum industry is highly energy intensive. The differential in world power costs is the most important determining factor in selecting the site for a new primary aluminum smelter and, during recession, is the most important determining factor for maintaining or discontinuing operations at one smelter relative to another."

That passage is drawn from a report entitled "Energy and the Primary Aluminum Industry", issued by the ITA in 1985.

In the early 1970s, electricity costs in the United States were in the lowest quartile worldwide. Within ten years, they had risen into the highest quartile of costs worldwide.

It is true that all energy costs increased globally as a result of the sharp increase in oil prices imposed by OPEC during that decade; but that does not account for the fact that electricity costs in the United States rose substantially higher than the world average. There was no shortage of economical powerplant fuel in this country: the United States has enormous reserves of coal.

Without going too deeply into a very complex subject, let me just say that the higher U.S. electricity costs were brought about largely by national and state regulatory policies governing powerplant capital investment and cost recapture.

The cost of electricity to producers of aluminum in the United States now averages about 2.3 cents per kilowatt hour, while the average cost to foreign producers is only about 1.6 to 1.8 cents per kilowatt hour; the electricity cost to foreign producers can reach as low as 0.5 cent per kilowatt hour, as in Canada and Venezuela.

Considering typical electricity consumption in aluminum smelting, this means that the electricity to produce one pound of aluminum costs about 18 cents in the United States -- 7.5 times what it cost as recently as 1979. And against that 18 cent cost in this country, the electricity cost to produce a pound of aluminum averages only about 13 cents abroad, a 28 percent advantage to our foreign competitors.

A glance at aluminum prices on the London metal exchange will be enough to show you how large that electricity cost difference is, as a fraction of the market price of aluminum.

I mention the metal exchange to make another point as well: aluminum ingot is a commodity, bought and sold in an open international market.

U.S. aluminum producers, competing on price with the rest of the world, cannot pass increased costs along to their customers. The customers will simply find other suppliers, at the market price.

In addition, an estimated 40 percent of foreign aluminum smelting plants are owned or controlled by foreign governments which often subsidize them, or manage them for such national policy purposes as sustaining employment or gaining foreign currency. These plants, operating on such agendas, present an unfair competition which further undermines the market position of U.S. companies which must bear their own costs without subsidy.

None of these factors lies within the control of the U.S. aluminum industry.

The U.S. industry has made vigorous efforts to improve its efficiency and reduce its production costs, with considerable success. Responding to the U.S. government's energy conservation campaign, the aluminum industry pledged energy efficiency improvements reaching 20 percent by 1985, compared with 1972; it surpassed that goal three years early. As we move closer to maximum theoretical efficiency, however, we are running out of ways to cut electricity use much further.

In addition, several electric power suppliers, most notably Bonneville Power Administration, as well as, utiliites in Missouri and South Carolina, after difficult negotiations, have provided some relief to aluminum producters in the form of moderated electricity rates.

Despite our major improvements in energy efficiency and some rate relief, the U.S. aluminum industry remains burdened with the 28 percent electricity cost disadvantage that I described earlier.

In these circumstances, any further cost increase threatens the continued competitive viability of an aluminum plant trying to operate in the United States. This is not a rhetorical statement, I assure you. In 1984, the United States had 32 primary aluminum plants. Today, just three years later, only 21 of them are still in operation; the others are shut down.

Potential Impacts of Acid Rain Legislation on the Aluminum Industry

The acid rain legislation under consideration would certainly increase the capital and operating costs of producing electricity at coal-fired powerplants, and those costs would impact aluminum smelters dependent on that electricity.

The Congressional Research Service recently estimated the electricity rate increases which would result from passage of acid rain legislation based on information prepared last year by ICF Incorporated. The CRS update as it appeared in the Congressional Record last March 6, pointed out that aluminum and chlorine/caustics are the two industries which would be hardest hit by rate increases.

And let me quote this further comment:

"In both cases, the industries are engaged in international competition, particularly the aluminum industry. In 1986" -- still quoting the CRS report -- "the price of aluminum on the international market was about 50 cents a pound, compared with a rough average cost of 60-to-65 cents a pound for the two smelters in Kentucky."

The author there was citing Kentucky as only one comparison example; the study recognized cost impacts in various states with aluminum smelters. And for us, the bottom line lies in this report's estimate of the electricity rate increases threatened by these acid rain bills, as a proportion of the price of our product. The CRS estimated that the projected electricity rate increases to aluminum smelting plants could range from 2.5 to as much as 17.5 percent of the price of aluminum!

Our own industry surveys project similar rate increases from this legislation. Studies by the Congressional Budget Office, the Office of Technology Assessment, Management Information Services, Inc. (a private research organization), and Edison Electric Institute (which represents investor-owned utilities) all project serious cost impacts from acid raid legislation.

There is already an urgent need to adjust existing electricity rates, for the health of the aluminum industry. Some recognition of this fact is beginning to sink in. However, the moderate rate relief won from electric utilities in Missouri and South Carolina, will be cancelled by the effects of pending acid rain proposales and the cost-price squeeze on our industry will be even greater than before.

That is why we urge this Committee so strongly to consider the full implications and impacts of the proposed legislation -- to look beyond its environmental intentions at the economic havoc it might cause.

When you take an industry already fighting for survival, with an existing artificial cost handicap on its back, and add another 10 percent or 12.5 percent, or 13.8 percent, or 17.5 percent to its product costs -- and all of those numbers are applied to aluminum smelters in the CRS projections -- you do, in reality, raise serious questions about its ability to continue to operate in this country.

Environment is your specific mandate; but this particular environmental issue has dragged some very unattractive economic impacts home with it and placed them on your doorstep.

Of the 21 primary aluminum plants still operating in the United States, we have identified eleven plants -- half of our remaining industry -- that could be adversely impacted by the proposed acid rain legislation. I am providing that list to the Committee for your convenience. (Attachment 1)

Based on a survey by affected aluminum companies it was estimated that acid rain legislation requiring a 10 million ton reduction in sulfur dioxide emissions considered last year would have increased production costs by 12 to 15 percent at these eleven plants, which depend on coal-fired electrical generation. Kaiser Aluminum estimated that the cost of production would increase about 15 percent at its Ravenswood, West Virginia, plant.

Based on an SO_2 reduction of 12 million tons in the pending bill, we believe that plants would experience electricity cost increases of between 12 and 28 percent. (A more detailed analysis is contained in Attachment 2.)

Potential Economic Impacts

When an aluminum plant shuts down, local or regional economies are hurt severely. Aluminum smelters are major local employers. Jobs and tax revenues are lost; and, ironically the electric utility itself may suddenly be thrown into financial trouble by the loss of one of its major customers.

Loss of aluminum compaines as customers will require residential and commercial users to provide the lost revenues for affected utilities. Rate increases to these customer classes could be in excess of 20 percent. For example, two large aluminum plants closed not long ago in Arkansas, but the utility still must continue to recover its fixed costs. As a result, the remaining ratepayers of Arkansas Power and Light System were faced with the probability of a 20 percent rate hike.

The ITA report that I cited earlier pointed out, and I quote: "The loss of even a small portion of the aluminum industry can have a severe regional economic impact in addition to its negative implications for the nation in general."

That report estimated what would happen in western Kentucky if the Sebree and Hawesville aluminum reduction plants were to shut down. It found that a total of more than 4,200 aluminum industry and related jobs would be lost and, with them, $102 million in payroll. Sebree and Hawesville are among the eleven plants clearly jeopardized by the acid rain legislation now under consideration.

The Eastalco smelter of Alumax Aluminum Corporation located in Frederick, Maryland, is similar to the industry as a whole in seeing its costs rise, particularly electricity. It is one of the few remaining major industrial employers in Western Maryland, it provides some 770 well-paying jobs. It is estimated that 1200 indirect jobs and $144 million in economic benefits are generated in the community. Eastalco is the largest industrial customer of its utility, Potomac Edison. It purchases about $73 million in power per year at full capacity, consuming about 21% of P.E.'s output.

But Eastalco is a plant on the edge. Primarily this is because at 28 mills, Eastalco pays among the highest electricity rates for any aluminum smelter in the U.S. To remain competitive, virtually every cost factor within the reach of management or labor has been reduced to the minimum. The costs for raw materials, natural gas and transportation have been renegotiated.

The loss of a smelter also causes a ripple effect in downstream aluminum fabricating operations. In most instances, molten metal from a smelter is transported directly to an adjacent rolling mill or other fabricating plant where the aluminum is alloyed and cast into rolling ingot, rod or billet for further fabrication. Substantial efficiencies are achieved in utilizing this hot metal. If U.S. smelters are closed and production is shifted to foreign countries, it is only a matter of time until major portions of the U.S. aluminum fabricating facilities will also move. This significantly compounds the economic impact of the smelter loss.

It is important to recognize that damage to the U.S. aluminum industry also damages the nation's economy, its balance of trade, and its security preparedness.

Aluminum is classified by the federal government as a strategic material, vital in aircraft, spacecraft and rockets, in other military equipment, and in the nation's economic infrastructure.

Summarizing a 1986 report by the U.S. National Materials Advisory Board, its chairman Nickolas J. Themelis wrote:

"A strong domestic industrial base, such as steel, copper and aluminum, is essential to preparedness for a national emergency. Therefore, steps ensuring the existence of these competitive industries must be integral parts of any national preparedness policy."

Conclusion

In conclusion, my thanks to the Committee for allowing me to present the testimony of the aluminum industry. I hope we have conveyed to you the urgency which we place upon this issue. We are asking you to focus on the serious problems posed for the aluminum industry by acid rain legislation.

We are a major U.S. industry, fighting to survive in a highly competitive world market. For many of our plants that effort would be seriously hampered by enactment of acid rain legislation that fails to address the electricity policy and cost questions we have raised. We urge the Committee to respond to the full range of impacts of this legislation as you consider the acid rain issue. The future of a significant part of the U.S. primary aluminum industry may be at stake.

Thank you.

Attachment 1

Aluminum Smelting Plants Threatened by Electricity Rate Increases Implied in Acid Rain Legislative Proposals

Indiana:	Warrick
Kentucky:	Hawesville Sebree
Maryland:	Frederick
Missouri:	New Madrid
North Carolina:	Baden
Ohio:	Hannibel
South Carolina:	Mt. Holly
Tennessee:	Alcoa
Texas:	Rockdale
West Virginia:	Ravenswood

Attachment 2

ALUMINUM ASSOCIATION, INC.
ACID RAIN CONTROL SURVEY
IMPACT ON THE PRIMARY ALUMINUM INDUSTRY

Background -

- Eight Primary Aluminum Producers operate eleven reduction plants which utilize coal fired thermal power for some or all of their electricity.
- These primary aluminum reduction plants are located in ten eastern, midwestern and southern states.
- This represents over 2 million tons of installed capacity - almost 50 percent of the total United States primary aluminum capacity.
- These eleven locations at capacity consume over 31 billion kilowatt hours of electricity a year.
- In addition to some self generating capacity five public utilities, TVA, two cooperatives and a public authority operate coal fired power facilities servicing these aluminum reduction facilities.

Impact of Acid Rain Legislative Controls - (estimated on a basis of a 12 million ton reduction of SO_2 and state control strategies)

- The increased cost of electricity resulting from proposed controls (estimated by individual primary aluminum producers) ranged from a minimum of 2.6 mills to 5.69 mills per KWH.
- The average estimated increased power cost of 4.75 mills per KWH represents a 20.3% increase over the current average industry electricity cost of 23 mills.
- Primary Aluminum Producers believe their electricity suppliers anticipate the use of scrubbers as the principal method of compliance thus the associated costs would be closer to the high end of the range.
- Combinations of scrubbing and fuel switching to lower sulfur coal may be the preferred compliance technique but the choice will depend on state emission requirements.
- Estimates of additional capital costs to the plants to comply with proposed acid rain controls ranged from $5 million for a single facility to almost $35 million for system-wide capital installations.
- If added SO_2 and NOX controls are imposed on aluminum plants, operation and maintenance cost increases of $3,000,000 to $5,000,000 per facility year are expected.
- The additional control costs, resulting from both capital expenditures and maintenance costs, could add 1 to 2.7 mills per KWH to basic costs.

STATEMENT
BY
EARLE F. YOUNG, JR.
VICE PRESIDENT
ENVIRONMENT AND ENERGY

ON BEHALF OF THE
AMERICAN IRON AND STEEL INSTITUTE

SUBMITTED TO
COMMITTEE ON WAYS & MEANS
U.S. HOUSE OF REPRESENTATIVES
SEPTEMBER 15, 1987

The American Iron and Steel Institute (AISI), the principal trade association of the nation's iron and steel industry, is extremely concerned that the Ways and Means Committee is giving consideration to H.R. 2497. Although these bills are nominally revisions to the Internal Revenue Code, analysis of them indicates clearly that they are intended as pollution control legislation to address acid rain and would become the major mechanism for control of emissions of sulphur dioxide and nitrogen oxides. As such, they are new and redundant air pollution control measures superimposed on the existing requirements of the Clean Air Act.

The steel industry has contributed a great deal to the improvement to air quality in this country. Capital expenditures by iron and steel companies for air pollution control facilities through 1986 have amounted to $3.8 billion. Operation and maintenance of these facilities adds $10 to $20 per ton to the cost of every ton of steel produced in this country. The air emissions from steel plants have been reduced to an extent that would not have been considered possible 20 years ago. The industry is continuing in its fight against air pollution, even though we believe we have carried a disproportionate load in achieving the progress that has been made.

The United States has successfully carried out its environmental programs by a direct regulatory approach. Under that approach, appropriate levels of government set standards for environmental quality, these are then translated into enforceable emission standards, and attainment of these standards is achieved by a workable mechanism of permitting and enforcement. The steady improvements in our environment, in spite of population and economic growth, demonstrate that this system works.

Yet, the thrust of adoption of H.R. 2497 would be to change the nation's pollution control program from a regulatory approach to one also based on emission fees. The concept of emission fees is not a new one. It has been promoted in the past by theoretical economists as a panacea, in books which purported to demonstrate superiority of emission fees over other environmental control strategies. In the real world, however, the faults of this system outweigh its theoretical advantages in dealing with the complex social, technical and political problems of pollution control. Several pollution control committees of the Congress gave this concept some consideration in the 60's and 70's, but rejected it as a strategy.

To change from a workable system directed at specific environmental goals to a system that also imposes emission fees would be to turn our back on all that has been learned and on the successes we have experienced. It would mean to substitute arbitrarily set fees for well defined environmental goals. Unless and until someone develops a methodology for assessing adequately the true value to society of a clean environment, or conversely, the true cost to society of a unit of pollution, any emission fees would necessarily be arbitrary. Yet, these fees as proposed by these bills are so high that they would become the driving force of a major part of the nation's environmental program. AISI does not believe that such a major change is warranted.

AISI is also concerned that once the concept of an emission fee is adopted to address one alleged environmental problem--acid rain, it will be expanded to address other issues, such as, ozone or co-nonattainment or hazardous air pollutants. The potential costs of emission fees for SO_2, NO_x, CO, TSP, VOC and other pollutants would be prohibitively high.

Furthermore, whether as a revenue raising mechanism or a means of environmental control, these bills are inequitable. They would impose a disproportionate share of a major revenue requirement on heavy industry, on the manufacturing industries so essential to this country's economic health. A principal effect of this bill would be an immediate increase in utilities costs for the generation of electricity. Department of Energy data indicate that heavy industry purchases over one third of the power generated by the utilities. It can be anticipated that, in order to keep residential rate increases moderate, state utilities commissions would impose a significant portion of this cost, probably at least 50%, on rate increases for industrial users. The effect on American industrial competitiveness in the world market could be severe.

The steel industry is seriously concerned with the cost that the proposed legislation would force our industry to absorb. During the 1982-1986 period, the domestic steel industry posted losses of nearly $12 billion, including steel sector losses of over $4 billion in 1986 alone. As you know, these results have forced two major steel companies--LTV and Wheeling Pittsburgh Steel--into Chapter 11. And some steel analysts have predicted that without a period of sustained prosperity, other major steel producers may also be forced to file for protection under the bankruptcy laws.

In the face of these disastrous losses, and a negative cash flow for the industry for the 1982-1986 period of -$3.7 billion, the steel industry's commitment to modernization and continued investment in steel production is impressive. During this period of heavy losses and negative cash flow (1982-1986), the domestic steel industry invested $7.8 billion in new plant and equipment. And while this level of investment is impressive given the conditions under which the domestic industry has had to operate, the amount of money available for such investment has declined dramatically in recent years as the borrowing capacity and the ability of the industry to generate funds internally has declined. Steel industry investment in plant and equipment in 1986 fell to $882.7 million, down from $2.3 billion as recently as 1982 and $1.6 billion in 1985.

It also should be noted that under the President's Steel Program the U.S. Trade Representative has negotiated 19 voluntary restraint arrangements (VRA's) with the major steel exporting countries that account for approximately two thirds of the steel that is shipped to the United States. And while the level of steel imports under the Program which was expected--approximately 20.2%--has not been reached, as a result of the VRA's, steel imports have declined from a high of 26.4% in 1984 to 23% in 1986. Thus, the purpose of the Program, which was to reduce the high and rising levels of steel imports so that the steel industry was given time to restructure and modernize, would conflict directly with the impact of the proposed legislation. This legislation would impose additional costs on the steel industry, and would therefore reduce the steel industry's ability to restructure and modernize.

Costs of this bill to the steel industry would be high. Two types of costs would be imposed--the increased costs of electric power and the cost for emissions from steel industry boilers. On the assumption that the emission fees would be paid and that the costs would be passed through directly to the steel industry in proportion to our power use, we would incur additional costs of about $250 million per year. While some of these costs might well not be incurred because utilities would reduce their emissions to some extent, the amount paid by the steel industry would probably be close to this because of the nature of rulemaking as discussed above. In addition to the increased electrical costs, the steel industry would be faced with direct emission charges since we do operate large boilers, frequently coal fired. It is estimated that the emission fees based on current emissions would add $100 million per year to our operating costs. It is doubtful whether it would be feasible to make necessary investments and to incur increased operating costs to reduce these emission fees. Therefore, the steel industry would be faced with a total increased operating cost of $350 million per year as a result of the enactment of H.R. 2497.

The steel industry, therefore, urges that the Ways and Means Committee not report out H.R. 2497 because these bills (a) do not represent sound environmental control policy; and (b) would impose exhorbitant and disproportionate costs on our industry.

Thank you for your consideration.

Statement of the American Paper Institute, Inc.

The American Paper Institute is the national trade association of companies that produce pulp, paper and paperboard. We appreciate the opportunity to submit these comments on HR 2497, the "Sulfur and Nitrogen Emissions Tax Act of 1987."

Our member companies are very interested in efforts to improve this nation's air quality, and we, as an industry, are proud of the progress we have made in reducing emissions from our manufacturing operations.

Overall, we believe the existing mechanisms of the Clean Air Act are working. Since the early 1970's, air quality has improved dramatically, and further improvements are forecast for the years ahead. Under the Clean Air Act, emissions from new larger sources are controlled to the greatest extent possible using Best Available Control Technology (BACT); emissions from small sources and larger existing sources are controlled to the extent necessary to meet ambient air quality standards.

On a national level, between 1973 and 1985, there has been a 25% reduction in sulfur dioxide (SO_2) emissions despite an increase in the use of coal and petroleum products. Current SO_2 emission levels are roughly equivalent to those found in 1920, and down sharply from their peak prior to promulgation of the 1970 Clean Air Act. According to the National Acid Precipitation Assessment Program (NAPAP) "Interim Report: The Causes and Effects of Acidic Deposition," SO_2 emissions will continue to decline, even if no new control techniques are developed, because of existing Clean Air Act controls. For our industry, progress has been even greater. SO_2 emissions from forest products manufacturing facilities decreased 22% in just 5 years -- from 1980 to 1985. This represents a 200,000 ton decline in SO_2 emissions since 1980, bringing total emissions to 700,000 tons in 1985.

Much of this progress can be attributed to the United States' pulp, paper and paperboard industry's large investments in control technology, process changes and energy productivity and efficiency. Regarding this latter point, the most important of these energy productivity improvements include the following: (a) implementation of energy conservation measures, (b) increased use of wood residues, (c) increased cogeneration capabilities, and (d) replacement of old equipment with new energy efficient, lower emission units.

Through 1985, our industry had spent over $2.9 billion on air quality protection for (a) equipment designed with the single purpose of emission control from power boilers and pulping and papermaking operations; (b) conversion of power and steam generating power boilers to burn fuels, including wood residues, with lower emissions; and (c) additional kraft recovery furnace capacity permitting minimal sulfur emission rates. In 1986, $109 million was spent for these activities, and the planned expenditures for 1987 are $126 million. These capital expenditures for air quality protection principally reflect add-on control technology to reduce sulfur emissions and do not include related fixed, administrative, and environmental research costs, or operating and maintenance costs at the mill level.

While we believe the Clean Air Act is working, we urge Congress to seek continued progress on the clean air front and to carefully evaluate new proposals, such as HR 2497. The direct, standard-setting approach embodied in the Clean Air Act is certainly not the only approach to controlling emissions of air pollutants. However, Congress should carefully consider both the theoretical and "real world" implications of other approaches and the relationship of these approaches to existing environmental laws and regulations.

To ensure coherent and cost-effective environmental policies, we must avoid a patchwork approach to pollution control. In this regard, we are concerned that HR 2497 may not be considered in an environmental policy context but, rather, as part of an overall effort to provide new forms of revenue as required under this year's Congressional Budget Resolution. As an industry, we have supported deficit reduction efforts through a reduction in spending. We recognize that, per the Budget Resolution, there may have to be new revenue sources as well, but we would hope that efforts to increase revenue would be designed to encourage savings, investment and faster economic growth. But the battle over the budget must not be confused with the important objective of improving our environment. Therefore, we strongly recommend that Congress and this Committee evaluate this proposal from the standpoint of its effectiveness as a mechanism to encourage cost-effective air quality progress and not for its potential to raise revenue.

Additionally, aside from the fact that we believe this proposal deserves more comprehensive analysis in the context of national environmental policy, we are concerned over the seemingly arbitrary manner in which the legislation would establish tax rates on emissions of SO_2 and nitrogen oxides (NOx). The suggested rate of up to 45 cents per pound of emission does not appear to be related to any established economic or scientific principle. These rates do not seem to be related to any production externality cost associated with pollution. Furthermore, the proposed fees would not necessarily be an effective deterrent to pollution and, to our knowledge, there is no evidence to suggest how adjustment of the rate upward or downward would reduce or increase SO_2 and NOx emissions.

In summary, our industry urges the Committee not to disrupt the present standards that have been the traditional approach to clean air legislation. The Clean Air Act has brought significant progress in improving air quality, and there is no need to impose new standards unless they are proven to be more efficient and cost-effective than current law.

The paper industry has made outstanding progress in reducing emissions. We are committed to continuing these successful efforts through large investments in control technology and process changes, including energy conservation measures. But implementation of this proposed tax would not necessarily result in significant emission reductions. Rather, any additional expenditures in the form of emission taxes would increase costs for a number of industries and products, raise inflation rates for the nation, and reduce productivity and real GNP. In addition, discriminatory impacts on specific regions and sectors of the economy would weaken their competitive position in the national and world economy. Moreover, the monitoring, recordkeeping, and reporting of emissions, calculated taxes, and allowable credit would result in a significant administrative and cost burden for both companies and the federal government.

The American Paper Institute, therefore, must oppose this legislation. However, we are ready to work with this and other Congressional Committees in an effort to explore the range of options that may be available to improve federal programs designed to control air pollution.

STATEMENT OF THE AMERICAN PETROLEUM INSTITUTE ON THE SULFUR AND NITROGEN EMISSIONS TAX ACT OF 1987

The Sulfur and Nitrogen Emissions Tax Act of 1987, H.R.2497, proposes a tax on emissions of sulfur dioxide and nitrogen oxides from larger steam boilers and steam-producing furnaces. This statement presents the views of the American Petroleum Institute (API) on H.R.2497. API is a national trade association representing over 200 companies and 5000 individual members. API's members are engaged in all aspects of the petroleum industry including exploration, production, refining, transportation, and marketing. API opposes H.R.2497. The legislation is ill-advised as a device to control acid deposition because not enough is known about the causes and the effects of the problem.

API suggests that, when causes and especially effects are poorly understood -- as they are in the case of acid deposition -- prudent policy requires better information. This information will at least in part be provided by research currently in progress. Sensible policy does not prescribe remedies based on inadequate information. Yet H.R.2497 embodies such a prescription. Consequently, API views the proposed goal of H.R.2497 as premature. Furthermore, even if the goals of H.R.2497 were justified, the specific mechanisms contained in the bill are not the best means to meet these goals.

Sulfur and nitrogen oxide emissions are associated with a variety of phenomena, including effects on health, visibility, and acid precipitation. The present Clean Air Act already addresses the health and welfare effects associated with ambient concentrations of sulfur and nitrogen oxides. Although H.R.2497 does not explicitly state its goals, API views the implicit goal of H.R.2497 as reducing acid deposition.

Acid deposition is the common term used for a complex phenomenon including rain, snow, and fog of higher than normal acidity. It may also be used to describe deposits of dry acidic particles. Acidity in precipitation comes from both natural and man-made sources. Higher than normal acidity can cause changes in the ecosystem that affect plants, water, and a variety of organisms. Although the exact role of acid deposition precursors -- principally sulfur dioxide and oxides of nitrogen -- is not well understood, there is much political pressure to decrease emissions to reduce the acidity of precipitation in sensitive regions.

A substantial amount of research has been conducted in recent years regarding the atmospheric chemistry of acid deposition precursors, the relationship between source and receptor regions and new technologies to control emissions. The research has yielded important insights. Existing laws and regulations applied to new emissions sources, as well as new technology in emission control and coal utilization, will mean that future sulfur emissions will continue to be reduced, without new legislation.

Important questions and uncertainties remain. These areas include nitrogen-oxide balances, hydrocarbon mix and reactivity, the complexities of transport, and especially the effects of acid deposition on living organisms, materials, and ecosystems. The government's acid precipitation study (National Acid Precipitation Assessment Program), due to be completed in three years, should provide a more accurate description of atmospheric processes and transport. Efforts should be made to accelerate the completion of the study.

H.R.2497 aims at reducing acid deposition by levying fees on nitrogen and sulfur oxide emissions even though both the magnitude of direct causal links between the emissions and acid deposition and the effects or damages from acid deposition are still uncertain. No clear evidence demonstrates that the mechanism in H.R.2497 will reduce acid deposition.

If passed, H.R.2497 would impose taxes on emissions beginning in 1989. Prudent policy would wait for a clearer understanding of the causes and effects of acid rain before expensive, new legislation is enacted. Consequently, API finds the bill to be premature.

Even if the proposed bill were timely, it has several major problems. First, and most importantly, it contemplates imposing an emission fee system on an existing regulatory scheme. An emission fee system cannot work effectively if it is superimposed upon an existing "command and control" regulatory scheme. For example, existing air quality laws and regulations already impose direct regulatory requirements on emissions of NO_x and SO_2 and severely restrict the choice of control alternatives. If an additional system, such as emission fees, were to be added on to the present system, it would provide less flexibility than either system alone. The use of any economic incentives for environmental control should be accompanied by a lessening in existing requirements so that emitters under the incentive-based system can choose among alternatives.

Second, the bill would rely on qualified continuous monitors to measure emissions, and it would penalize firms who did not use monitors and those whose monitors were inoperative. For this form of measurement to work, reliable monitors need to be available at a reasonable cost. This is especially true for nitrogen oxide emissons, since analysis of fuel characteristics does not provide a good proxy for uncontrolled emission levels. API is concerned that the state of monitoring technology may be inadequate to implement H.R.2497 fairly. Congress should not legislate a fee system unless monitoring technology is adequate.

Finally, the bill would result in a large transfer of funds from emitters to the governnment. This would be yet another tax on industry, which is already heavily taxed. Putting a fee system in place could encourage the government to increase fees in order to raise revenues, rather than to reduce emissions. Hence, there could be upward pressure on the rates.

In addition to these general comments about the bill, API wishes to comment specifically about its effects on the petroleum industry. Sulfur and nitrogen oxide emission sources in the petroleum industry are already stringently controlled through existing laws and regulations. The imposition of a fee, as proposed by H.R.2497, would be inequitable and result in payments by those industry sources that do not currently meet the emissions threshholds of H.R.2497. To superimpose a fee on the existing system would not allow the flexibility to achieve cost-effective solutions that a fee system should allow. The majority of sources of nitrogen and sulfur emissions in the petroleum industry are in the refining sector. Existing information suggests that emissions from these boilers are largely below or just at the threshold of H.R.2497. Data from 1983 indicate that the average SO_2 emission level of boilers in that year was 0.636 pounds per million Btu heat input, and the corresponding NO_x emission level in the same year was 0.172 pounds per million Btu. Most new boilers would fall below the threshold because they meet the New Source Performance Standards requirements.

Petroleum industry emissions contribute approximately 3.6 percent of U.S. emissions of SO_2 and one percent of total U.S. NO_x emissions. NO_x emissions from steam boilers in the petroleum industry are responsible for less than 0.2 percent of total U.S. emissions. No comparable figures exist for SO_2.

Two indirect costs to the petroleum industry of H.R.2497 exist. First, electricity costs to the industry would rise. It is estimated that the proposed tax would cause electricity costs to increase by five percent.

Second, purchases of high sulfur oil would fall as low sulfur oil is substituted. The disincentive for use of such oils, and the increasing demand for lower sulfur content fuels could potentially affect the mix of U.S. petroleum imports.

In conclusion, API believes that the proposals contained in H.R.2497 are ill-advised. More research is needed into the causes and effects of acid deposition before new legislation is enacted. Even if the proposed bill were timely, it is seriously flawed. First, superimposing a fee system on an existing regulatory system has major disadvantages. Second, the state of monitoring technology may be inadequate for the purpose of measuring emissions.

COMMENTS OF THE
AMERICAN PUBLIC POWER ASSOCIATION
ON
H.R. 2497,
SULFUR AND NITROGEN EMISSIONS TAX ACT OF 1987

September 22, 1987

The American Public Power Association (APPA) is the national organization that represents approximately 1,750 local publicly owned electric utilities throughout the United States. About one of every six consumers in this country is provided electricity by a public power system.

About one-third of public power systems generate all or part of their electric power needs, and these systems provide about 10 percent of the nation's electrical generation. Over 900 local publicly owned electric systems purchase all or part of their electric power requirements from investor owned utilities, whose rates are regulated by the Federal Energy Regulatory Commission. Two-thirds of the electric power supplied by public power systems, either by self-generation or wholesale purchase, is derived from fossil fuels.

APPA Policy on Acid Rain

APPA supports national acid rain legislation that can meet reasonable standards of effectiveness, economy, and equity. We believe, based on support from all regions of our membership, that the interests of consumers in both a clean environment and in reliable electrical power at reasonable cost could best be realized through the adoption of the following central principles in acid rain legislation:

1. The program should include a nationwide funding mechanism based on an emissions fee applied to SO2 and NOx emissions from all fossil fueled sources for which an emissions fee is feasible. Such sources specifically include utility boilers, industrial boilers, industrial processes, smelters, cars, and trucks. APPA specifically opposes electricity taxes.

2. Monies raised through emissions fees should be applied to fund adequately the most cost-effective, verifiable emission reduction measures. Such measures for SO2 reductions specifically include fuel switching, fuels pretreatment, scrubber systems, fluidized bed combustion, and other measures now under development whose performance can be verified over the course of the program.

3. The program should be structured in two phases, with the continuance of the second phase contingent upon affirmative action by Congress. Phasing would assure that mid-course corrections can be made in the program if necessary and will help ensure that the large expense of any reduction program is made in the most cost-effective manner.

H.R. 2497

APPA appreciates this opportunity to offer our comments on H.R. 2497 to the Ways and Means Committee. Representative Gregg and his staff have discussed this legislation with APPA staff on a number of occasions. Unfortunately, our views on this issue are quite different, and despite openness to suggestions, the direction taken in H.R. 2497 is fundamentally in conflict with APPA policy.

An emissions tax or fee is a central provision of both APPA policy and H.R. 2497. Conceptually, however, the two examples of an emissions tax are very different in both purpose and effect. APPA's fee would be used to finance cost-sharing for a regulatory program designed to achieve "least cost" emissions reductions. All money raised by the APPA-proposed fee would be used to achieve a cap on utility rate increases that would result from the cost of compliance with acid rain controls. The APPA-proposed tax would be a fraction of the tax imposed by H.R. 2497, and there would be no excess revenues generated. Conversely, the fee in H.R. 2497 serves as the sole incentive or "stick" to motivate industry to reduce emissions. As such it is set at extremely high levels and would have a much greater impact on consumers.

Any acid rain control program must balance two different objectives -- achieving significant emissions reductions while protecting consumers from excessive costs of achieving those reductions. H.R. 2497 appears to provide a powerful incentive for reducing emissions, but it would achieve that objective at a much higher cost than necessary.

Although the revenues from the emissions tax would obviously decrease as emissions were reduced, the Edison Electric Institute has estimated that the tax would cost utilities and their consumers over $15 billion annually based upon 1985 emissions rates. The Treasury Department has projected emissions tax levels of $9.6 billion per year from H.R. 2497 by 1992.

In contrast, the cost of a relatively flexible regulatory approach such as S. 316 (or last session's H.R. 4567) would be approximately $3 billion annually (according to ICF Inc.), even though those bills would accomplish significant reductions of almost 10 million tons of sulfur annually.

Such huge differences in consumer cost are simply unacceptable, and should be enough to convince Congress that H.R. 2497, while perhaps conceptually intriguing, is too expensive to pursue.

Why is H.R. 2497 so expensive?

H.R. 2497 establishes a permanent emissions tax. Once all cost effective emissions reductions have been made, the only function of the tax would be to raise revenue. As a revenue raiser, an emissions tax is terribly regressive, unnecessarily raising the cost of a basic necessity. APPA believes that an emissions tax can only be justified as part of an acid rain control plan if every penny raised by the tax is used to mitigate the cost to the consumer of control measures. To the extent that the emissions tax raises excess revenue, APPA will oppose the bill as unnecessarily expensive.

There are a number of different factors which contribute to the higher cost of the bill, one of which is the bias of the bill in favor of expensive capital equipment such as scrubbers. The bill provides a tax credit for capital costs of "qualified pollution control equipment." The bill also establishes a trust fund which the companion bill, H.R. 2498, makes clear is for loans for pollution control equipment or new powerplants. The tax credits and loan fund (absent the guidance of a consumer-oriented regulatory plan) will distort emissions control decisions against less expensive options such as conservation, coal washing, fuel blending, fuel switching, and even some less capital-intensive clean coal technologies such as the limestone injection multistage burner (LIMB) or in-duct sorbent injection.

Second, the market approach of H.R. 2497 is more expensive because it lacks the flexibility of some proposals that allow state plans that could target the most cost-effective emissions reductions. For example, some emissions reduction techniques, such as the ones mentioned in the preceding paragraph, are relatively low cost. Other reductions, such as installing scrubbers at a large powerplant, are more expensive, but may make policy sense because of the large reductions they achieve. However, the highest cost reductions, such as requiring scrubbers on all sources, simply don't make economic sense.

For example, requiring a scrubber on a plant nearing retirement or on a small powerplant (100 MW or less) or on a plant used primarily for peak power (and thus only run about 20 percent of the time) would impose an extremely high cost on electric consumers for each ton of emissions reduced. Such emissions sources simply cannot cost-effectively reach the threshold levels which are required by H.R. 2497 in order to avoid imposition of a tax. Under the bill, they would be faced with either paying the punitive tax or possibly closing down because the tax penalty makes continued operation uneconomic. Neither option is in the best interests of consumers.

Third, the tax is imposed too quickly (1989-1991) to allow time to implement some of the most cost-effective strategies. First of all, there is simply insufficient lead time to plan and implement many emissions reductions strategies. In addition, although clean coal technologies are not the total answer to problems of acid rain, they could be important to quite a few utilities. The timeline of H.R. 2497 would force more expensive solutions because many clean coal technologies will not be commercially available by 1991.

Fourth, the threshold levels of H.R. 2497, which would allow utilities to avoid the tax, are set too low. Few existing sources can reduce SO emissions to .6 pounds per million Btus in a cost-effective way. It is even more difficult for existing plants to reach the NOx threshold of .4 lbs/MMBtu. The inevitable result is that the tax will continue to cost consumers millions of dollars beyond the point where it can still provide incentive for additional cleanup. Such excess tax revenues are not in the best interests of consumers and can only be avoided by raising the tax bracket levels to more realistic levels.

Finally, the cost effectiveness of H.R. 2497 could be improved by exempting certain sources that contribute minimal emissions, but would be very expensive to retrofit. The bill includes a small plant exemption that is a step in the right direction, but the exemption level of approximately 10 MW is too small to have much practical value.

In conclusion, APPA believes that the ideal approach to acid rain control would achieve significant emissions reductions through legislation that maximizes utility flexibility and minimizes the cost to the consumer. H.R. 2497 is many times more expensive than such an ideal approach. Although adjustments could be made to reduce the costs imposed somewhat, the tax as conceived by this legislation is certain to generate huge amounts of excess revenue and must be opposed on that basis.

Testimony of

THE HONORABLE TERRY L. BRUCE
before the
House Ways and Means Committee
on the
Sulfur and Nitrogen Emissions Tax Act of 1987

September 9, 1987

Thank you Mr. Chairman for the opportunity to appear before you and the members of the House Ways and Means Committee. The focus of today's hearing, HR 2497, is of great consequence to my district and to the Midwest. Therefore, I am especially pleased to be able to offer my comments on this legislation. My concerns are with the fairness of the approach taken in this legislation and with promoting the process by which the House can expect to ultimately act on air pollution control legislation.

Mr. Chairman, as you may know, the Energy and Commerce Committee members began informal discussion of revisions to the Clean Air Act before the August recess. I believe that forum offers the best chance of reaching an agreement on the unresolved scientific, environmental and regional issues which currently stymie emissions control legislation. To single out one region, or one or two pollutants for control, undermines the coalition building necessary for the effort to reach a compromise which is acceptable to all the participants in the debate on air borne pollutants.

This year, discussion of changes to the Clean Air Act take on special importance. On January 1, 1988 over seventy cities are expected to be out of compliance with the ozone standards set by the Act -- the EPA has threatened many of these cities with sanctions for failure to comply. In addition, the debate over acid rain is not yet resolved and there are new initiatives on air toxics and ozone-depleting chlorofluorocarbons.

The goals of HR 2497 are laudable, sulfur dioxide and nitrogen oxide are two pollutants that contribute to several environmental problems. We must, and will, find a practical way to reduce emissions of these pollutants. The legislation before us would tax two types of emissions that are present nationwide and therefore the bill aims to reduce these emissions. However, I must note that there is nothing in this bill that guarantees any reductions in any pollutants -- or even any precursors of pollutants. In fact, HR 2497 can only hope to succeed by delivering repeated body blows to regions like the one I represent. And eventually such measures would be the knockout punch to our rural economy which is already reeling from years and years of persistent economic recession. As HR 2497 now stands, other areas would not contribute an equitable share to reducing what is clearly a national pollution problem. One region should not bear the brunt of the cost of cleaning up what is a national problem.

The specific costs of HR 2497 to my region are estimated by a National Coal Association study which revealed that the annual emissions tax which would be owed by utilities serving my district to be as follows: Illinois Power - $7 million; Central Illinois Public Service - $17 million; and Central Illinois Light Company - $13 million. Illinois Power estimates that the cost of investing in the pollution control equipment, the increased operation and maintenance costs, and emissions taxes would require an increase to the ratepayers of approximately 20 percent. These additional costs, in some cases will come on top of rates which already reflect the costs of recently constructed scrubbers on high-sulfur coal burning plants.

I understand that the staff of the Joint Tax Committee has raised several points of concern regarding the HR 2497. Since the bill would raise utility rates we could expect an increase in domestic manufacturing costs. In addition, the bill requires costly monitoring of emissions in order to calculate the emissions tax owed. Finally, the bill would discourage the use of high sulfur coal. This final point is of great concern to my region. The mining economy is already on the ropes having lost tens of thousand of jobs in the last few years. It will be difficult for my region to support legislation that offers little or no protection to our coal mining industry unless all the Clean Air Act issues are on the table.

The Office of Technology Assessment has estimated that this approach would bring sulfur dioxide emission reductions in the range of 6 million to 10 million tons. However, it is quite possible that many utilities would find it more economic to pay the tax than pay the cost of cleanup. If this is indeed the case then my region would face a big jump in utility rates without any attendant benefits to the environment through sulfur dioxide emissions.

Of greater certainty is the liklihood that many utilities will have no choice but to pay the tax on nitrogen oxide at many facilities. While there are technical and operational problems associated with reducing sulfur dioxide emissions, reducing nitrogen oxide emissions is even more difficult. Utilities in my area could go ahead with "low NOx burners" at some of the plants in my district. The cost to Illinois Power for building "low NOx burners" at four plants by 1991 would be about $10 million. All of which will, in one way or another, be passed on to the individual ratepayer.

However, utilities which operate cyclone boilers would face an even greater problem in reducing nitrogen oxide to escape the emissions tax. Cyclone boilers cannot be retrofitted with low NOx burners to reduce NOx emissions. Selective Catalytic Reduction (SCR) is the only technology which has the potential to reduce nitrogen oxide emissions from cyclone boilers. Unfortunately, SCR has only been demonstrated on boilers rated below 250 Megawatts which burn either low sulfur coal or oil. The cyclone boiler retrofit problem will affect utilities in my district and around the country where there are currently 68 cyclone burners in operation. These utilities will have no choice but to pay the nitrogen oxide tax until the utility is retired. So, in at lease these instances, the result of this bill would be only to increase taxes in my area and there would be no reduction in nitrogen oxide.

With this legislation, I understand that the gentleman from New Hampshire has gone to considerable effort to address some of the usual -- and well founded -- objections to regulatory approaches to controlling sulfur dioxide and nitrogen oxide. I am not sure that it is possible to fine tune HR 2497 to a point where it would be acceptable to my region and recognizable by the author. However, I strongly urge to this Committee the importance of continuing the effort to reduce all air borne pollutants as a part of comprehensive revisions to the Clean Air Act rather than by a piecemeal approach.

By singling out two pollutants, nitrogen oxide and sulfur dioxide, this legislation ignores the major role played by hydrocarbons in the damage often associated with acid rain, as well as the formation of ozone. While nitrogen oxide plays a role in ozone formation and forest damage, hydrocarbons are a key ingredient. The Congressional Research Service, in discussing alternative emissions control strategies, states that, "unless the NOx provisions were strong or hydrocarbons included in the program, crops or forests would probably benefit little." Given the liklihood that utilities would, in many cases, find it more economic to pay the nitrogen oxide tax rather than reduce emissions, and given the absence of hydrocarbon controls in HR 2497, I am concerned that we would see little progress in crop and forest damage with this approach.

The advantage of pursuing a comprehensive revision of the Clean Air Act would be new measures to combat nitrogen oxide and sulfur dioxide as well as hydrocarbons. In addition, the Clean Air Act is the proper forum to discuss the question of air toxics and Chlorofluorocarbons (CFCs). Our best chance at making progress with each of these pollutants with emissions control legislation is when all of them are on the table at once. That is when regions, industries, and lawmakers can strike a bargain. When a region or industry is singled out, compromise is difficult or impossible.

Mr. Chairman, I represent a part of Illinois which is still looking for the economic recovery we've heard so much about. Of the eighteen counties which I represent almost all of them have double digit unemployment. This is not news in my district. We've had this level of unemployment dating back to the start of the recession in 1980. The average unemployment rate in my district is about 15% -- at times it has been as high as 20% -- this has been the case for seven years.

In addition, the population in my district is relatively old. In some of our counties up to 20% of my constituents are over 60 -- in one county the figure is 27%

We have seen plant closings in shoes, textiles and heavy industry. Many of our products and crops are aimed abroad -- with each trade deficit figure worse than the one before it my district faces shrinking markets for its goods.

My district in downstate Illinois is an energy producing region with significant oil and gas production in addition to eight coal mines. The low tide in the energy industry hurts us, too.

We already face some of the highest utility rates in the country. And our many ratepayers are old and on fixed incomes, or unemployed.

To further increase these rates with legislation such as HR 2497 would hit my constituents hard and further damage our declining industries. To increase these rates without assurance of significant pollution control is absolutely unacceptable to us.

These concerns are really about fairness and the process of emissions control legislation, and until these concerns are addressed I am reluctant to bring my constituents another round of bad news on the economic front. Thank you Mr. Chairman.

Central Illinois Light Company
300 LIBERTY ST. / PEORIA, IL 61602

September 14, 1987

The Honorable Terry L. Bruce
1009 LHOB
Washington, DC 20515

Dear Terry:

RE: H.R. 2497 (H.R. 2498) Sulfur and Nitrogen Emissions Tax Act of 1987

Central Illinois Light Company (CILCO) opposes the passage of both H.R. 2497 and H.R. 2498. As we have indicated to you in previous correspondence, there is to date no conclusive proof that a specific cause and effect relationship exists between emissions from fossil-fired utility power plants and alleged acidic degradation of our environment.

Over the past several years, CILCO has significantly reduced SO2 emissions from its power plants. Our newest facility, Duck Creek Station, was built under the New Source Performance Standards and incorporates in its operation a wet limestone scrubber which enables this plant to meet an SO2 requirement of 1.2 lbs/per MMBTU. Our other plant, E. D. Edwards Station, is meeting a standard of 1.8 lbs/per MMBTU for SO2 emissions as required by the state, primarily by fuel switching.

We are also aware of SO2 reductions by other utilities. Yet, measurement of these reductions as a benefit to the environment, has not been reported. Until a definite cause and effect relationship has been scientifically proved between such emissions and the acidic degradation of our environemnt, legislation such as H.R. 2497 (H.R. 2498) would impose a catastrophic cost burden on the customers of those utilities so taxed.

We also strongly argue against the passage of this legislation, as it appears to be designed primarily to raise revenues and not to deal effectively with the issue of the environment. Over the years, this issue has been primarily within the jurisdiction of the House Energy and Commerce Committee. To the best of our knowledge, this bill has not been referred to that committee. It would seem to us to be a very serious oversight to not permit that committee to review this legislation.

Our initial calculations indicate that based upon 1985 emissions, this tax is estimated to cost CILCO and its customers $22.3 million annually, $14.7 million for SO2 emissions and $7.6 million for NOx. Assuming constant emissions, our tax would be phased in as follows: 1989 @ 25% - $5.6 million; 1990 @ 50% - $11.2 million; 1991 and beyond @ 100% - $22.3 million. The tax, however, will vary proportionally to annual changes in emissions and changes in the cost of living.

The tax structure is such that utilities and emission sources such as CILCO, who have already made significant investments to reduce emissions, will still have to pay significant taxes to fund emission reductions at other sources. In no way is this fair to CILCO customers. CILCO, therefore, is placed in a position where it neither receives credit for previous emission reduction efforts nor a major economic benefit from the Sulfur And Nitrogen Emissions (SANE) trust fund which the legislation creates. In extreme cases, some sources could opt to simply pay the tax thus raising revenue but providing no improvement to the environment.

H.R. 2497 (H.R. 2498) also provides that only the costs for capital investments in qualified pollution control equipment can be funded by the SANE trust fund. This fund does not provide financial support for other emission reduction options such as fuel switching, coal cleaning and conservation. Furthermore, all newly incurred operation and maintenance expenses such as for additional employees needed to operate and maintain new equipment, will be borne by the source. These costs which also must be passed on to our customers, can be considerable.

To determine SO2 and NOx emissions for purposes of the tax assessment, CILCO would most likely use Continuous Emission Monitors (CEM). Although fuel sampling and analysis may be used in place of CEM's for emissions determination, the emission tax structure, which ranges from 10¢ to 45¢ per lb. of emissions would be replaced by an across the board tax rate of 50¢ per lb. This severely and unreasonably penalizes the use of the coal sampling and analyses technology which is currently accepted and utilized widely by CILCO and the utility industry. CILCO, therefore, would install CEM equipment at its E. D. Edwards Station at a cost of approximately $500,000.

Some utilities including CILCO, are currently participating in Clean Coal Technology demonstration projects to develop cost effective options for future use in controlling emissions. H.R. 2497 (H.R. 2498) would eliminate the incentive to continue with these projects as utilities would be faced with short term emission reduction needs in order to reduce tax liabilities. With taxation beginning in 1989, the incentive will be to reduce emissions as quickly as possible, using costly but proven technology. Thus, no new technology will be developed and deployed.

We urge you not to support H.R. 2497 (H.R. 2498). We would appreciate hearing your views.

Sincerely,

C. R. Neumiller
Director - Legislative &
Public Affairs

CRN/cjb112

CLEAN AIR WORKING GROUP
818 Connecticut Ave., N.W.
Suite 900
Washington, D.C. 20006
(202)857-0300

September 9, 1987

The Honorable
Dan Rostenkowski
Chairman
Committee on Ways and Means
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

The Clean Air Working Group (CAWG) consists of over one hundred representatives of the U.S. business and industrial community in Washington, DC. CAWG members include individual companies, most industry trade associations and other organizations representing business and industry. The group's purpose is to coordinate the business community's response to Clean Air Act legislative activities.

CAWG is opposed to enactment of HR2497 or HR2498 the "Sulfur and Nitrogen Emissions Tax Act of 1987". We urge the Ways and Means Committee to reject both bills.

The stated purpose of these bills is to establish an excise tax on the emission from boilers of sulfur dioxide and nitrogen oxides and to create a Sulfur And Nitrogen Emissions trust fund (SANE) for revenues from the emission taxes. The SANE trust fund would provide ten - year interest-free loans for pollution abatement equipment and fifteen year loans with interest at two percent below prime for new plant construction.

The sulfur dioxide and nitrogen oxide emission taxes are designed to generate approximately sixteen billion dollars per year. Small boilers below one hundred million BTUs per hour and larger boilers between one hundred million and two hundred and fifty million BTUs per hour with hourly emission rates of 1.2 pounds per million BTUs or less are exempt from the emission taxes. All other commercial, industrial and utility boiler emissions would be subject to the tax.

The real purpose of these bills is to tax and thus discourage the boiler emissions of sulfur dioxide and nitrogen oxide - the precursors of acid rain. Like other acid rain bills that have been considered by the last three Congresses, CAWG believes it is premature to consider any acid rain control legislation at this time. The enclosed CAWG statement on acid rain dated August 12, 1987 outlines our rationale for opposition to acid rain legislation at this time.

While opposing acid rain control legislation at this time, it is appropriate to note that these bills would impose an acid rain control program that is two to three times more expensive than the cost of other acid rain control bills. In addition to the unjustified and extraordinary cost of the bills, the impact of the bill, while national in scope, would disproportionately hit some states. It is estimated that electric utilities within ten states would incur costs of over one half billion dollars per year and in three states, Indiana, Ohio and Pennsylvania, over one billion dollars per year. The cost to Illinois is estimated at just under one billion dollars - $983 million. Finally, it is unclear why we should adopt a national policy of subsidizing interest rates for some boilers or forgiving loans made for some boiler replacements.

The concept for an emissions tax is not new. Serious consideration was given to emission taxes in the 1960s and the 1970s but was rejected as the basis for the nation's clean air program. Whatever the merits of emission taxes as a national policy to control air pollution, the adoption of the emission taxes should be in lieu of and not in addition to requirements imposed under the Clean Air Act. To superimpose an emissions tax on the existing regulatory scheme of the Clean Air Act is redundant, contradictory and costly.

The Clean Air Act is working. It was enacted in 1970 on the premise that the prevention and control of air pollution at its source is the primary responsibility of states and local governments. The purpose of the act was and remains to protect and enhance air quality so as to promote public health and welfare and our productive capacity. Since 1980, our economy has expanded - GNP has grown by half in real terms, our population increased by over forty million people, automobile use is up 60%, we consume two-thirds more electrical power and our communities have grown. Despite this growth, our air is measurably cleaner today compared to 1970. National annual levels of total suspended particulates, sulfur dioxide, carbon monoxide, nitrogen oxides, ozone and lead have been reduced. The number of exceedances of the air quality standards for these pollutants have also declined. Our efforts to protect public health have been successful. This success is striking in light of the country's economic growth since 1970.

CAWG is concerned with the precedent that would be set by the bills before the Ways and Means Committee. If we establish a precedent of setting emission taxes to control acid rain, then that precedent could be easily extended to other environmental issues. The precedent, once established, could be expanded to address ozone nonattainment by taxing hydrocarbon emissions. It could be expanded to address carbon monoxide nonattainment or nonattainment of the total suspended particulate standard. Obviously, the cost of emission taxes on other pollutants of concern would be prohibitively expensive.

As the Washington Post reported on July 20, 1987, the United States currently spends about 77 billion dollars per year, about 2% of GNP, on pollution control. This represents an amount equal to the total of all doctor bills. This is a cost of almost 1-1/2 billion dollars per week paid for by private companies and consumers. The bill before the Ways and Means Committee would increase this cost by over 16 billion dollars per year or almost 1/2 % of GNP.

We urge the Ways and Means Committee to reject HR2497 and HR2498. This country does not need to establish the precedent of emission taxes to protect public health or to insure continued progress in air quality consistent with economic growth. The current Clean Air Act has proven capable of accomplishing these goals.

Sincerely,

Earl W. Mallick
Chairman

Attachments

CC: Other members of the Committee on Ways and Means.

August 12, 1987

CLEAN AIR WORKING GROUP
STATEMENT ON ACID RAIN

Clearly, feelings run strong in the acid rain debate. Many sincerely believe that the problem has been neglected too long, that the delay is costly and that we know enough to mandate legislation to protect resources of concern. Others believe there is no acid rain problem and any control program beyond the provisions of the Clean Air Act would be a waste of national resources. The Clean Air Working Group (CAWG) has taken a middle ground, that there may be a problem, but based on a growing body of evidence, it is not an ecological crisis. That we have time for science to guide public policy. That there is substantial justification to avoid a rush to judgement. That we will never have all the answers, but in 18 to 24 months we will have additional and key information to determine the need for or the size and scope of an acid rain program.

It is our view that acid rain is one of several atmospheric phenomena that should be studied to insure that sound science guides public policy. These studies have been underway for many years and the results are just now becoming available. Prudence dictates that we pause and consider this important information. Further, we believe there is no acid rain crisis and no justification for a rush to judgement by the 100th Congress.

The National Acid Precipitation Assessment Program (NAPAP) mandated by Congress in 1980, is supplying information and answers to important questions. The NAPAP 1985 annual report to Congress was released in March, 1987. The NAPAP interim report, summarizing their findings to date, is due in 1987. NAPAP participated in the Joint Report to Bilateral Advisory and Consultative Group (BACG) February, 1987, status report of Canadian-U.S.research in acid deposition. The results of this carefully conceived, comprehensive, Congressionally mandated 10-year investigation will continue to flow to the public for several years. By design, the most important and comprehensive information was not expected to be available from the NAPAP effort until the last two years of their study.

Meanwhile, the Clean Air Act is working — health-based ambient air quality standards for sulfur dioxide and nitrogen oxides (SO_2 and NO_x) have been attained in virtually all of the country and sources of SO_2 and NO_x emissions are controlled.

We can all agree that there is a perception of a problem. Polls confirm that the public is concerned about acid rain. And we recognise that this concern translates into political pressure for Congress to act. The pressure will not be relieved until Congress acts or until the facts reassure the public.

We believe the facts are reassuring. It is our hope that the evolving science of acid rain, as reflected in NAPAP and other studies, will guide the Congressional debate so that legislation, if needed, will invest national resources in a cost-effective manner that effectively protects resources of concern.

The precursors of acid rain are SO_2 and NO_x. The major source of SO_2 emissions are coal and oil-fired electric utility plants, industrial activities and space heating. Total SO_2 emissions reached a peak of 28.7 million tons per year in 1973. By 1985, they had been reduced over 26 percent to less than 21 million tons. The trend in SO_2 emissions is down and may continue to decline or stay flat for several years. Please note that the SO_2 annual emission rate between 1973 and 1985 decreased by about 8 million tons — a reduction similar in scale to that called for in several acid rain control bills.

The major source of NO_x emissions are electric utility plants, transportation and industrial activities. NO_x emissions have also declined from a peak of 21.1 million tons per year in 1978 to 20 million tons in 1985. Transportation emissions of NO_x have consistently declined over the last 10 years and will continue to decline — these reductions have more than offset other NO_x emission increases. NO_x emissions may remain flat for the next few years.

The point is that acid rain precursors, SO_2 and NO_x, are controlled under the Clean Air Act. Their emissions have been significantly reduced and national emission trends are down for SO_2 and flat for NO_x.

Yet, despite significant SO_2 and NO_x emission reductions, there has been no measurable change in the acidity of rainfall over the same period. There is no documented reduction in acid deposition over the same period. There seems to be no corresponding change in the alleged effects of acid rain.

While we generally understand how acid rain is formed, we do not have an adequate understanding of the relationship between sources of emissions and acid deposition at a receptor. There is no certainty that a given reduction of SO_2 and NO_x emissions will result in an equivalent reduction in acid deposition at a receptor or that alleged effects will be alleviated. We simply do not know if future emission reductions will improve the acidity of rain or decrease acid deposition. More importantly, will future emission reductions alleviate the alleged effects of acid rain and provide any protection to resources of concern?

To answer these questions, we must be able to model the acid rain phenomenon. We can measure what is happening and compare it with historic data without fully understanding acid rain. However, to predict what will happen requires a fuller understanding of the phenomenon and sophisticated computer models that have not yet been developed. Currently, field measurements and models differ by as much as 100 percent. We simply do not have the tools to predict with confidence the impact at a receptor from source emission reductions. If past reduction and impact measurements are any guide, there may be no impact, no improvement, no measurable environmental change from future SO_2 and NO_x emission reductions.

The extent of actual effects from acid rain is very uncertain. In many cases, the alleged effects of acid rain have been exaggerated, misunderstood or not demonstrated. Since these effects are the basis for public concern and possible Congressional action, they need to be fully understood.

Resources, such as lakes and forests, are thought to be at risk from acid rain. If they are, they should be protected. But before mandating protection we need to understand the risk to ensure we provide meaningful protection.

Surface water acidification is the major acid rain concern. The claim that thousands of lakes are now quite acidic and many more will become so is not supported by the facts. A 1986 National Academy of Sciences report states that in the Northeast, some lakes have become more acidic, some less, others unaffected and the role of acid deposition is not known. The 1986 EPA Lakes Survey identified one acidic lake in the West -- from natural causes, and perhaps 600 in the East -- many in Florida. The EPA survey does identify lakes that may be vulnerable to acidification.

We have reason to assume there is a problem with the acidification of lakes. But the size of the problem was exaggerated. We need to know the cause and how to protect our lakes -- perhaps on a case by case basis -- before we act. Is the cause acid deposition, agricultural runoff, natural soil conditions or local rather than the long-range transport of acid deposition?

We also have reason to doubt that a significant emission reduction program will protect a lake. Past reductions have had no documented impact. For lakes then, the size of the problem has been exaggerated and there is no single, simple solution.

Much less is known about the effects of acid rain on forests than on aquatic systems. Reports of forest declines in Europe and the U.S. are of concern. In Germany, the most recent explanation is not acid rain but a combination of factors, including nature, climate and local sources of pollution.

In the U.S., the Northeast red spruce decline is often blamed on acid rain. However, a 1986 National Academy of Sciences report states there is no indication now that acid rain is an important factor. The report does list other possible causes.

The U.S. Forest Products Industry has conducted extensive evaluations of forest decline reports in Germany and the U.S. They concluded that there is no evidence of a widespread regional forest decline caused by air pollutants in North America.

For forests then, acid rain probably is not the culprit. Concerns for acid rain's role are either wrong or not fully understood. Local sources of pollutants may be one cause and ozone appears to be a factor.

It is difficult to identify damage to materials caused by specific pollutants or combinations of pollutants. Materials naturally deteriorate with time and it is difficult to distinguish the effects of acid rain from normal weathering. The role, if any, played by acid rain in the degradation of materials has simply not been demonstrated. The likely culprit is weather and local sources of pollutants.

Until recently, human health has not been an acid rain issue. And, it should not be. The National Ambient Air Quality Standards for SO_2 and NO_x were set to protect human health. Virtually all of the country is an attainment area for both pollutants. Therefore, human health is protected from both acid rain precursors. If there is any question of protecting human health, it should be addressed through the Clean Air Act.

In recent Congressional testimony, health effects were discussed for SO_2 and NO_x but, at concentrations above the ambient air quality standards. The testimony also covered adverse health effects from ozone but, again, at or above the health-based ozone standards.

Acid rain is not a public health problem. The only health issue that may be associated with acid rain is the release of heavy metals when exposed to low pH, and this is the subject of current research.

Our understanding of the acid rain phenomenon is not complete and results of current research presents substantial justification for pausing to reflect on the nature and scope of the problem. There remains a great deal of uncertainty about many facets of acid rain. Yet with all of the uncertainty surrounding acid rain, the one certain consequence is a staggering cost -- perhaps exceeding $100 billion over 20 years. This represents a significant investment of our national resources. It would have an adverse impact on jobs, regional dislocations, international competitiveness, electric utility rates and national energy security.

In light of the evolving science, uncertainties and staggering costs, can we justify acid rain controls now? We think not. And perhaps not in the future. But science can help answer these questions -- if we give it a chance. We have time to consider the flow of information from Congressionally-mandated research. We have time for science to guide public policy in the acid rain debate. There is no acid rain crisis! There is no need to rush to judgement on acid rain legislation.

Statement of the Chemical Manufacturers Association

Executive Summary

The Chemical Manufacturers Association (CMA) is a nonprofit trade association whose member companies will be significantly affected by the taxes proposed in H.R. 2497 and H.R. 2498. Many CMA member companies purchase electricity or generate their own steam to drive their manufacturing processes. Thus, chemical companies will face higher electricity rates and direct taxes on emissions.

CMA estimates that the total impact on the chemical industry of the proposed taxes would exceed $1 billion. Based on 1985 consumption, CMA estimates that the chemical industry uses about 5-1/2 percent of the electricity consumed in the United States. At 1980 levels of utility emissions, the chemical industry would face increases of $742 millions in electricity rates. Companies with steam boilers within the scope of the bills will face direct tax impacts. CMA estimates that the taxes on emissions would be $287 million. Both the electricity rate and direct tax impacts are calculated at the median tax rates proposed.

In addition to their cost impact, the bills are not sound from an environmental policy perspective. Companies that have spent money on pollution control equipment may still be taxed and yet not be able technically to install additional equipment with money from the trust fund. Congress should not enact tax penalties to meet environmental policy objectives.

Introduction

The Chemical Manufacturers Association (CMA) appreciates this opportunity to submit a statement on H.R. 2497 and H.R. 2498, both of which are known as the Sulfur and Nitrogen Emissions Tax Act of 1987 and were introduced by Congressman Gregg (R-NH). CMA is a nonprofit trade association whose member companies account for 90 percent of the productive capacity for basic industrial chemicals in the United States. The member companies of CMA have a vital interest in these bills because of their impact on energy and production costs. If Congress enacts a sulfur and nitrogen emissions tax, CMA member companies will face higher electricity costs for their chemical manufacturing processes and direct tax penalties for their own combustion sources. These costs will make the industry less competitive against foreign manufacturers.

II. Concerns with Sulfur and Nitrogen Emissions Tax Act of 1987

Chemical manufacturing is an energy intensive industry that will be significantly affected if Congress imposes the taxes proposed in these bills. Those CMA member companies that consume large amounts of electricity will face higher production costs. Companies that run their own steam boilers may face direct tax costs. Because of strong international competition the U.S. chemical industry will not generally be able to incorporate these additional costs in the price of chemical products. Chemical manufacturers will thus be forced to absorb the increased electricity costs and the taxes and will be less competitive against foreign manufacturers.

At the median tax rates proposed in the bill, the chemical industry would face increased electricity costs and tax penalties that total in excess of $1 billion. CMA estimates that the direct tax impact on the industry for emissions from steam boilers would be $287 million. At 1980 levels of emissions from utility sources, the cost to the industry in increased electricity rates would be $742 million. Both of these estimates are calculated at the median tax rates proposed in the Gregg bill, $.30/lb of SO_2 and $.25/lb of NO_x.

The costs proposed by these taxes will make the chemical industry, and other industries, less competitive against foreign manufacturers. A recent study by the U.S. International Trade Commission (ITC) shows that the US share of world petrochemical production declined from 42 to 35 percent between 1980 and 1985. The same study showed that the US share of total world exports of petrochemical derivatives fell from 27 to 22 percent during 1980-85. The ITC study also showed that fuel prices and taxes were two of the most important factors affecting the competitiveness of the chemical industry. In the 1986 debate over the Superfund Amendments and Reauthorization Act, Congress recognized the severe impact of taxes on the chemical industry and extended taxes on chemicals at or near former levels.

In addition to the impact on competitiveness of the chemical industry, CMA is concerned about the environmental policy implications of these proposed taxes. CMA believes that environmental policy should be based on measures that achieve the most positive results at the least cost. The Gregg bills, however, impose punitive taxes without regard to their impact on emitting industries. For example, chemical companies that have already invested in pollution control equipment may still be taxed under the Gregg bills and yet not be able to use money from the trust fund to install additional pollution control equipment. This would have the perverse effect of punishing those companies that have already expended their capital to reduce their emissions and that contribute least to air pollution problems.

III. Conclusion

CMA recommends that Congress not enact the taxes proposed in the Gregg bills. The taxes would impose a significant cost on the chemical industry and make it less competitive against foreign manufacturers. In addition, the taxes are not sound from an environmental policy perspective, and would punish those manufacturers that have already taken steps to reduce their emissions. To meet environmental policy objectives, Congress should seek positive economic incentives rather than tax penalties that have little direct relationship to those policies.

PREPARED TESTIMONY OF
PORTER J. WOMELDORFF, VICE PRESIDENT
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APPEARING ON BEHALF OF THE
ILLINOIS POWER COMPANY

Introduction

Chairman Rostenkowski, Members of the Committee on Ways and Means and Chief Council Robert J. Leonard:

My name is Porter J. Womeldorff and I am Vice President of Illinois Power Company. I am presenting comments on the Sulfur and Nitrogen Emissions Tax Act of 1987.

Illinois Power Company (IP) believes that current scientific evidence does not support the adoption of controls on midwestern coal-fired power plants. We recognize that the effects of the acid deposition phenomenon are of great concern to residents of certain sections of North America, particularly the upper Midwest and northeastern U. S. and eastern Canada. We also recognize that some lakes and forests in the upper Midwest are considered by some to be sensitive to acid deposition.

We do not believe the reduction of emissions from IP plants would significantly reduce the effects of acid deposition on distant environments. Therefore, we would like to take this opportunity to address five aspects of H. R. 2497/2498:

1. The lack of scientific evidence to support the adoption of air pollution control measures;
2. The amount and timing of the sulfur dioxide (SO2) and nitrogen oxides (NOx) emissions taxes;
3. The technical problems associated with the adoption of SO2 and NOx control technologies and the installation of continuous emission monitors;
4. The inadequacy of the "Sulfur and Nitrogen Emissions Trust Fund"; and
5. The economic impact of this bill on the customers of IP.

Lack of Scientific Evidence

One of the reasons Midwest SO2 and NOx emissions continue to be presented as the culprit in the acid rain debate is because the geographic areas exhibiting the most sensitivity to this phenomenon are largely downwind of midwestern coal-fired power plants. However, scientific studies continue to show that levels of emissions and deposition are not linear. The following quotes support this conclusion:

1. Baker, J. P. 1987. The Evolving Science of Acid Deposition. Kilkelly Environmental Associates, Inc., Raleigh, N.C.
   "As scientists have examined these processes and relationships in more detail, however, it has become increasingly evident that these simple answers are not adequate. Research has indicated that many of the processes involved in the transformation of SO2 to sulfuric acid are non-linear and complex and intricately linked to other air pollutants (e.g., NOx, volatile organic carbons, and oxidants) and specific meteorological conditions. Assumptions of linearity, therefore, are likely to be misleading. Many issues remain unresolved, and specific source-receptor relationships still cannot be predicted with reasonable certainty, that is, the degree to which acid deposition in a specific area of concern would be reduced by emission controls or reductions at any specific source or source-area."

2. Thomas, L. M. 1986. "The next step on acid rain." EPA Journal. Volume 12(5), pp. 2, 3.
   ".....It is difficult, if not impossible, to predict with any certainty to what extent acid deposition at any specific area would be reduced by emission controls on any specific sources."

3. Fisher, B. E. A. 1986. "The effect of tall stacks on the long-range transport of air pollutants." Journal of the Air Pollution Control Association. Volume 36, pp. 399-401.
   "Changes in stack height cannot be considered the major factor determining variations in sulphur and other potentially acid deposition in remoter regions of northwestern Europe and eastern North America."

Sulfur dioxide emissions from the four major utilities in Illinois have decreased by 41 percent since 1970 while coal usage has increased. This is the same period of time in which the acid rain problem is supposed to have worsened in eastern North America and the upper Midwest. This, in conjunction with the above conclusions, continues to lead us to believe that it would be ineffective to reduce emissions in Illinois in an attempt to diminish the effects of acid deposition on the environment.

There continues to be increasing evidence that SO2 and NOx emissions from coal-fired power plants should no longer be considered the primary causes of lake, forests, crop, and material damage. This is substantiated by the following scientific studies:

1. National Acid Precipitation Assessment Program. 1987. Annual Report, 1986. Superintendent of Documents, Washington, D.C.
   "There is increasingly clear evidence that sulfate deposition influences sulfate concentrations in surface waters. However, the relationship may be quite different in areas receiving similar deposition, for example, the Adirondacks versus the southern Appalachians, suggesting the importance of watershed characteristics in controlling sulfate mobility and acidification."

2. Kramer, J. R. 1986. Reevaluation of Trends in Surface Water Alkalinity in New York and New Hampshire. McMaster University, Hamilton, Ontario.
   "No conclusions as to the causes of these 'trends' can be drawn from these data. Alkalinity is neither the only nor an adequate measure of lake acidification. Lake acidification is a complex process involving acid and base inputs from numerous and different sources."

3. Woodman, J. N. and E. B Cowling. 1987. "Airborne chemicals and forest health." Environmental Science and Technology. Volume 21, pp. 120-126.
   "Although nearly 20 regionally important cases of change in condition of forest stress have been reported in Europe and North America, in only a few cases have airborne chemicals been considered probable or possible causal or contributing factors."

4. National Acid Precipitation Assessment Program. 1987. Annual Report, 1986. Superintendent of Documents, Washington, D.C.
   "Ambient levels of ozone in mountain forests are probably a significant contributor to stress in those forests which show visible decline."

5. National Acid Precipitation Assessment Program. 1987. Annual Report, 1986. Superintendent of Documents, Washington, D.C.
   "Acid rain in the amounts and concentrations that occur over the entire U. S. would appear to have no significant effects on the yield of most, if not all, agricultural crops."
   "The gaseous precursors to acidic rain have no impact on the yield of agricultural crops on a regional scale in the U. S."

6. Kucera, V. 1986. "Influence of acid deposition on atmospheric corrosion of metals: A review." Materials Degradation Caused by Acid Rain. (R. Baboian, ed.), American Chemical Society Series 318, Washington, D.C.
"The atmospheric corrosion of metals due to acid deposition is in most regions mainly a local problem restricted to areas close to the pollution source."

Scientists are telling us that while research results obtained to date have greatly expanded the understanding of the acid rain issue, many uncertainties remain. The expanding knowledge on the issue does not support earlier claims regarding alleged severe effects of acid rain and thus is casting increasing doubt on the likelihood that proposals calling for additional SO2 and NOx controls would confer benefits commensurate with the costs.

Imposition of the Sulfur and Nitrogen Emissions Tax

The amount and schedule for the imposition of taxes on SO2 and NOx emissions from fossil-fuel-fired steam generating units (boilers) as proposed by H.R. 2497/2498 would force IP as well as many other utilities to adopt SO2 and NOx pollution control measures as soon as practicable in order to reduce the tax liabilities, irrespective of good economic, financial, or technical reality.

IP would not be able to implement the SO2 and NOx control strategies available to totally eliminate paying any SO2 and NOx emissions taxes. It would also be impossible for IP to install the SO2 and NOx control strategies by 1989 in order to reduce tax liabilities. The proposed taxes on SO2 and NOx would be fully phased in by the time IP would be able to convert some of its units to low sulfur coal, retrofit low NOx burners (1991), and install limestone-based scrubbers (scrubbers) on three units (1994). The unavoidable SO2 and NOx emissions taxes for the years 1989 through 1993, while IP would be installing pollution control equipment, would total $649.7 million. This expenditure is approximately equal to the $716.4 million capital cost that would be incurred in an attempt to control these emissions. In addition, the installation of continuous emission monitors (CEM's) would take at least two years since monitor locations have to be approved by USEPA and there would be difficulties in installing CEM's on ceramic-lined brick stacks. These installation dates are optimistic, since IP believes the emergency demand for pollution control equipment and CEM's resulting from this bill would cause extended construction lead-times and increased equipment prices. H. R. 2497/2498 would force IP as well as many other utilities to implement available, short-term solutions as soon as practicable, with little consideration for long-term economic consequences, to avoid excessive taxes.

The timing of these taxes would also eliminate the option and incentive for clean coal technologies since more costly control measures would have to be taken before the current development efforts in these technologies is completed. This is particularly important to IP since one of these technologies is being demonstrated on a unit at the Hennepin Power Plant. It would not be feasible to develop these technologies quickly enough to avoid paying these taxes for significant periods. In addition, the projected removal efficiencies of emerging clean coal technologies are not high enough to reduce emissions from burning Midwestern coal below 0.6 #SO2/MBtu to avoid the SO2 tax.

Technical Problems Associated with Equipment Installation

Continuous Emission Monitors - To avoid paying higher taxes, IP would install CEM's on all of its boilers by 1991. The estimated cost for CEM's of average reliability is $5.2 million in 1991. However, the 25 percent penalty on the emissions taxes if CEM's are unavailable would require the purchase of additional CEM's as spares. This would increase both capital and operating costs. Since it would be impossible to install the CEM's by 1989, IP would have to pay the $0.50 lb/MBtu tax on SO2 and NOx emissions in 1989 and 1990.

Sulfur Dioxide Removal - To reduce the SO2 tax liabilities, IP would need to convert its Hennepin and Vermilion power plants to low sulfur coal by 1991 reducing our use of Illinois coal significantly. Scrubbers would be added to each of the three units at the Baldwin Power Plant by 1994. The rest of IP's units would continue to burn their current fuels: low sulfur coal, gas, and/or oil. The estimated cost of converting the Hennepin and Vermilion power plants to low sulfur coal by 1991 is $12.9 million. The estimated cost of installing scrubbers at Baldwin by 1994 is $688.0 million.

Nitrogen Oxide Removal - While there are technical and operational problems associated with reducing SO2 emissions, reducing NOx emissions to reduce IP's NOx tax liability creates very difficult problems. Retrofit NOx reduction represents a pollution control technology which is still developmental. NOx control can be attempted by combustion modification or post-combustion removal from the flue gas stream. Combustion modifications are the least expensive but also the least effective (approximately 40 percent to 50 percent reduction) of the two techniques. Post-combustion NOx removal is more capital intensive but can potentially achieve nearly twice the removal efficiency of combustion modification techniques.

Low NOx burners would be installed on Baldwin Unit 3, and all units at the Havana, Hennepin, Vermilion, and Wood River power plants. However, experience with retrofit of low NOx burners is limited. Physical limitations due to boiler geometry, impact on boiler operational performance, and other site-specific factors may preclude the installation of low NOx burners on some units. The estimated cost of installing low NOx burners on these units by 1991 is $10.3 million.

The lack of commercially-proven NOx retrofit technologies is a particular problem for IP's largest units, Baldwin Units 1 and 2, which have cyclone boilers. Cyclone boilers cannot be retrofitted with low NOx burners to lower NOx emissions. Both units burn high sulfur coal and are rated at approximately 600 MW each. Selective catalytic reduction (SCR) is the only technology which has the potential to reduce NOx emissions from cyclone boilers. SCR has been demonstrated -- but only on boilers rated at 250 MW or less which burn either low sulfur coal or oil. In addition, there are a number of potential long-term problems and impacts associated with SCR which need to be addressed prior to widespread commercialization. The impact of unreacted ammonia on downstream equipment such as electrostatic precipitators, air heaters, and scrubbers needs to be investigated as well as the effect the SO2 to SO3 oxidation reaction has on air heater pluggage and material corrosion.

IP is not the only utility which would be faced with reducing NOx emissions from cyclone boilers. There are currently 68 cyclone boilers in operation in the United States which were designed to burn coal or lignite. Like Baldwin, many of these boilers are larger than 250 MW and/or burn high sulfur coal.

Inadequacy of the Fund

To estimate the cost consequences of H.R. 2497/2498 IP assumed that pollution control equipment would be financed at the normal cost of capital. This assumption was made since the availability of funds and the conditions of the loan when using the interest-free loan financing are unknown. IP doubts that monies for interest-free loans would be available when needed for the following reasons. The SO2 and NOx emissions taxes would force all utilities to implement emission reduction strategies as quickly as practical to reduce their tax liabilities. In addition, distribution of the interest-free loans is not guaranteed, as the Fund Administrator is to use a set of five criteria to select loan recipients. Since most utilities would have little difficulty meeting these criteria, they would not help the Fund Administrator determine how the monies in the Fund should be allocated.

To minimize some of the uncertainties associated with using the interest-free loan, IP would suggest that a credit against all Federal tax obligations be allowed for any calendar year for an amount equal to the expenditures in that calendar year for SO2 and NOx control equipment. If the amount of construction expenditures in a calendar year exceeds the amount of the tax then a "carry-forward" of the credit could be allowed. This methodology would remove the uncertainties associated with obtaining money from the Fund.

The construction costs associated with the implementation of SO2 and NOx emission controls is only one component of the cost IP's customers would pay to comply with this bill. IP would incur greater operation expenses from burning low sulfur coal. In addition, there would be increased maintenance expenses associated with both the SO2 and NOx control equipment and the CEM's. These increased operation and maintenance expenses are not even addressed in this bill.

Economic Impact on Illinois Power

To reduce its SO2 tax liabilities under H. R. 2497/2498, IP would install scrubbers on three units and convert four units to low sulfur coal. In addition, eight units would be retrofitted with low NOx burners in order to reduce NOx tax liabilities. Continuous emission monitors would be installed on all units. (These control and monitoring technologies would cost $716.4 million. Since many utilities would be simultaneously competing for the equipment and services to control emissions, the costs of such equipment and services would escalate rapidly. This testimony does not attempt to reflect the cost effects of such escalation.) It is estimated that H. R. 2497/2498 would cost IP's customers $8.15 billion over the period of 1989 to 2026, $2.02 billion of this amount would be the emission taxes. This amount includes the revenue requirement associated with IP's investment in pollution control equipment and the increased operation and maintenance costs as well as the emissions taxes. This would result in a residential rate increase of approximately 20 percent. Assuming IP did nothing to reduce its SO2 or NOx emissions but change the dispatch order of its units, it is estimated that this bill would cost IP's customers $10.99 billion and $9.38 billion of this amount would be for emission taxes over the period of 1989 to 2026.

Summary

The scientific evidence quoted in this testimony demonstrates there is no factual basis to support the emission reductions which would be required to either avoid or reduce the tax liabilities associated with H.R. 2497/2498. These studies show that the farther a source is from a receptor, the less the source will contribute to the acidity of the rain at the receptor. In addition, the technology needed to reduce NOx emissions from cyclone boilers to avoid the tax is capital-intensive, and has not been demonstrated on a commercial scale for large, high sulfur coal-fired units.

H.R. 2497/2498 would require IP to implement SO2 and NOx control strategies in an environment of rapid increase in equipment cost without being able to consider economical, long-term system-wide solutions, such as clean coal technologies, to reduce the excessive tax liability. As the bill is structured, the ability of IP or any other utility to obtain sufficient money from the trust fund to finance its pollution control equipment construction is questionable.

Finally, our residential customers would incur an electric rate increase of approximately 20 percent without producing a discernible change in the effects claimed to result from acid rain.

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STATEMENT OF

MARCHANT WENTWORTH
CONSERVATION ASSOCIATE
IZAAK WALTON LEAGUE OF AMERICA

ON BEHALF OF THE

IZAAK WALTON LEAGUE OF AMERICA
AND THE
AMERICAN FISHING TACKLE MANUFACTURERS ASSOCIATION

The Izaak Walton League of America and the American Fishing Tackle Manufacturers Association appreciate the opportunity to submit testimony to the Committee on Ways and Means in support of the Sulfur and Nitrogen Emissions Tax Act of 1987 (H.R. 2497).

The Izaak Walton League of America (1701 N. Ft. Myer Drive, Suite 1100, Arlington, VA 22209) is a national conservation organization composed of 46,000 members in 412 chapters throughout the country. Since its founding in 1922, the Izaak Walton League of America (IWLA), has sought to preserve our natural heritage through citizen education and advocacy.

The American Fishing Tackle Manufacturers Association (1250 Grove Ave., Barrington, IL 60010) is the national trade association of the fishing tackle industry. Formed in 1933, the American Fishing Tackle Manufacturers Association (AFTMA) has over 500 regular and associate members who supply 95 percent of the fishing tackle and related accessories sold annually in the United States.

The IWLA and the AFTMA strongly support The Sulfur and Nitrogen Emissions Tax Act of 1987 (H.R. 2497). We urge the members of this Committee to support and approve this legislation.

We believe that H.R. 2597 offers a national solution to a national problem and provides the states with an emissions reduction program that is both fair and flexible. The acid rain controls contained in H.R. 2497 are needed because:

1. Present levels of acid deposition have already resulted in the acidification of hundreds of lakes and streams throughout the country. Thousands of other lakes and streams are threatened by acidification unless present levels of acid deposition are reduced;

2. The loss of fish and other wildlife resources that results from this acidification deprives millions of outdoor users of valuable recreational opportunities and;

3. Loss of these recreational opportunities could reduce the demand for sports and fishing equipment manufactured and used by our members.

We would like to provide greater detail on these points.

ACID RAIN DAMAGES FISHERIES

The Office of Technology Assessment (OTA) has reported that more than 9,000 lakes and 60,000 miles of streams in the eastern United States are threatened by acid rain. At least 10 percent of freshwater lakes in New England have already been affected by acid deposition. The acidity of over 1,300 lakes in Maine has increased more than eight times since 1974. As a consequence of this increased acidity, reproduction of native brook trout has ceased in all of the sampled lakes above 2,000 feet. In Massachusetts, eight out of the ten best trout fishing ponds on Cape Cod are now too acidic to support fish. In New York, acid rain has already killed the fish in 212 Adirondack lakes. In Pennsylvania, the Fish Commission has warned that more than 5,000 miles of prime trout streams could be lost to acidification. A 1985 study by EPA revealed that over 50 percent of Florida's 7,700 lakes are already acidic and a report by the Wisconsin Department of Natural Resources states that 3,400 lakes in that state are susceptible to damage from acid rain. In the adjoining state of Minnesota, the Minnesota Pollution Control Agency found that 15 percent of the state's 15,000 lakes have been damaged and another 2,600 are now at the critical stage.

ACID RAIN THREATENS WATERFOWL POPULATIONS

The Izaak Walton League released a report in March, 1987 that details new evidence that indicates that acid rain may contribute to the mysterious 60 percent decline of black ducks that has occurred since 1955. Research demonstrates that lake and pond acidification may be causing serious and widespread damage to the breeding grounds of many other water birds.

For example, a 1985 study performed at the Patuxent Wildlife Research Center in Laurel, Maryland, found that the mortality of black duck young raised on acidic wetlands was over three times that of ducklings raised on non-acidic control wetlands. The researchers concluded that:

> "those results present strong evidence of the potential deleterious effect of wetland acidification on the productivity of free-ranging black ducks and possibly other populations of dabbling ducks inhabiting areas affected by acid precipitation."

The problem is not just limited to the Eastern part of North America. The seasonal wetlands in the prairie pothole regions of Minnesota, Wisconsin, Michigan, and North Dakota, which annually produce some 5 million ducks, are of particular concern. In Minnesota alone, preliminary samplings show "alarming low" pH levels in seasonal wetlands during spring runoff.

Kathleen Fischer, a researcher with the Canadian Wildlife Service in Ottawa summed up the problem by saying:

> "We now know that acid-stressed lakes do not produce many baby ducks."

In testimony submitted to the House subcommittee on Health and Environment on July 6, 1987, Mr. Frank C. Bellrose, Principal Scientist, Illinois Natural History Survey, examined the various theories that have been forwarded to examine the decline of the black duck. Mr Bellrose specifically rejected all of the major theories and concluded:

> "To date the theory of acidifcation of water areas in the black duck's breeding range is the only theory that offers a plausible explanation for what has happened to the black duck in time and in space. It seems folly not to pursue this problem with imagination, initiative, and vigor.

This nation has spent millions of dollars to maintain populations of waterfowl by preserving wetlands, setting game regulations, and banning DDT and lead shot. However, this new evidence indicates that present levels of acidification may be undercutting those efforts. As a result of the evidence presented in this study, the Izaak Walton League believes that further delays in passing measures to control acid rain may put an extensive regional fish and wildlife resource at great risk.

ACID RAIN DAMAGE THREATENS TO LIMIT RECREATION OPPORTUNITES FOR MILLIONS OF OUTDOOR USERS. THIS DAMAGE WILL REDUCE THE DEMAND FOR RECREATIONAL EQUIPMENT AND ERODE THE ECONOMIC BASE OF THE FISHING TACKLE, SPORTS EQUIPMENT AND TOURIST INDUSTRIES IN THE AFFECTED AREAS.

Nationwide, millions of Americans depend on our natural resources for recreation and this recreation contributes billions of dollars to the national economy. The IWLA and the AFTMA fear that damage from acid deposition will significantly limit recreational opportunities in acidified areas and erode the demand for fishing and sports equipment, particularly in the areas surrounding these acidified areas.

The latest national survey conducted by the U.S. Fish and Wildlife Service indicated that a record 141 million Americans participated in wildlife-associated recreation in 1985, spending over $55 billion. The estimated 46.6 million adult anglers spent a total of $28.2 billion -- an average of $604 per fisherman. According to a study by the Sports Fishing Institute (SFI), the indirect economic benefits of sportsfishing totaled another $25 billion. In 1985, an estimated 34 percent of the adult men in this country participated in this sport. The fishing tackle industry employs about 1,000,000 people.

The economic impact of acid rain damage on this large sector of society has not been examined in great detail. However, the figures that are available demonstrate that damage to sportsfishing, recreation , and tourism, amounts to billions of dollars annually. We believe that the present and future cost of this damage greatly exceeds the cost of acid rain controls.

A preliminary assessment performed in 1985 by the National Acid Precipitation Assessment Program (NAPAP) revealed that acidification of just the Adirondack lakes alone could result in a loss of between $0.7 to $12 million in recreational income to the area. The Pennsylvania Fish Commission has predicted that unless acid rain controls are enacted soon, acid deposition could acidify more than 5,000 miles of prime trout streams and could cost the state an estimated $35 million a year in lost recreation income. In Minnesota, state officals have warned that acid rain damage in that state could cost the state $40 million annually. In only one area of Minnesota, the popular Boundary Waters Canoe Area, the Minnesota Pollution Control Agency estimated that acid rain damage could cost the area 3,000 jobs. And in Wisconsin, the Department of Natural Resources estimated that fishing contributes an estimated $54 million to the state economy and that 3,400 lakes in Wisconsin are susceptible to acid rain damage. In summary, the best figures now available indicate that in only the three states of New York, Pennsylvania, Minnesota, the cost of acid rain damage to sportsfishing alone could amount to as much as $87 million annually.

It is important to note that this estimate of $87 million includes the economic impacts on fishing and outdoor recreation in only three states. However, numerous studies indicate that the problem of acidification occurs far beyond this three state region. As a consequence, it is likely that the total nationwide economic damage would be much greater than $87 million.

However, even these figures, as large as they may be, still overlook the economic impact on other "non-users." The General Accounting Office, in their analysis of the short-comings of the econometric effort by the National Acid Precipitation Assessment Program commented that:

> "to the extent that there are non-user values associated with the existence of fish populations in the Adirondacks, this figure may well understate the total losses in the Adirondacks attributable to acidic deposition."

In spite of these findings, the federal government has failed to undertake any serious study of the economic damage to natural resources. NAPAP has never formally released the preliminary assessment of economic damage in the Adirondacks and has refused to undertake any additional econometric studies on the effect of acid deposition on the economy. According to a GAO report released in April, 1987, NAPAP staff economists were not replaced when they left the program and the NAPAP Director of Research stated that until the effects of acidic deposition can be quantified, NAPAP will not be funding any economic analysis efforts.

In our view, this approach is short-sighted and ignores the negative effect that acid deposition has on the fishing tackle, recreation, and tourism industries.

CONCLUSION

The Izaak Walton League of America and the American Fishing Tackle Manufacturers Association strongly urge the members of the Committee on Ways and Means to approve the acid rain control provisions contained in the Sulfur and Nitrogen Emissions Tax Act of 1987 (H.R. 2497).

Thank you.

TESTIMONY ON BEHALF OF THE NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

I submit this testimony on behalf of the National Rural Electric Cooperative Association (NRECA), as the association's Environmental Counsel. NRECA opposes the sulfur and nitrogen oxides emissions tax proposed in H.R. 2497 and urges this Committee to reject consideration of this bill.

NRECA represents over 1000 non-profit consumer-owned electric systems located in 46 states and in 2600 of 3100 counties within the United States. These cooperative electric systems provide 25,000,000 people with central station generated electricity. About 50 percent of this distributed electricity is self-generated with the remaining portion purchased from investor-owned utilities or federal power marketing agencies. Over 80 percent of cooperative generated electricity originates from fossil fuel fired boilers that are of the type subject to the H.R. 2497 taxing proposal.

The tax, based on emissions from fossil fuel boilers, is to encourage emissions reductions of pollutants associated with acidity of dry and wet deposition. Our membership is not opposed to doing their fair share to ensure a clean environment; however, we vehemently oppose the taxing scheme proposed in H.R. 2497 on sulfur and nitrogen emissions on general principles as well as a means to achieve a cleaner environment. Specifically, there are at least three compelling reasons why the taxing principles proposed in H.R. 2497 are flawed.

First, since the emissions tax would impose such a heavy economic burden on fossil fuel electric generators, capital funding for either retrofitting existing facilities with additional pollution controls, or building modern facilities would be almost impossible. It is hard to fathom how this tax would encourage utilities to build additional pollution control facilities when the tax combined with the required capital outlays to eventually reduce the tax through emissions reductions would be financially devastating.

Second, the proposed emissions tax would function inequitably as a personal tax for the rural electric customers whose utility rates are already substantially higher than their neighbors receiving electricity from other sources. Although the electric cooperatives are legal corporate entities, they possess little equity, have no investors or shareholders to share cost burdens of the corporation, and are completely owned by their customers. Consequently, the electric cooperative consumer bears the entire financial burden for the costs of providing electricity. Thus, an emissions tax on an electric cooperative operates as a personal tax on the cooperative owner-customer. Considering 75 percent of the cooperatives have rates higher than their neighboring utilities and over 40 percent have rates over 24 percent higher, an emissions tax borne totally by the cooperative consumer is clearly overburdensome and unfair.

Third, the tax is punitive without reason since it would apply to many electric cooperative systems that have facilities equipped with expensive pollution control equipment. As mentioned above, 80 percent of the electric cooperative generation is from fossil fuel fired boilers. While this accounts for only five percent of the nation's total in this fossil fuel category, the cooperatives own almost 20 percent of the operating flue gas desulfurization (FGD) units. Thus, relative to the industry-wide status, the cooperatives are "pollution control heavy". H.R. 2497 would ironically reward this extraordinary pollution control effort--which obviously was achieved at great expense--with an additional, substantial, and unreasonable tax.

In summary, the proposed tax in bill H.R. 2497 is a bad idea. For the electric cooperative systems and their owner-customers, the tax would be imposed disproportionately, inequitably and unreasonably. NRECA, therefore, urges the Committee to reject the proposal.

STATEMENT BY
NEW YORK STATE ELECTRIC & GAS CORPORATION
TO THE
COMMITTEE ON WAYS AND MEANS
ON THE
SULFUR AND NITROGEN EMISSIONS TAX ACT--H.R.2497
September 18, 1987

Background

Over 99 percent of the electric customers in New York State are served by the seven investor-owned electric utilities (Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., Long Island Lighting Company, New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation, Orange & Rockland Utilities, Inc., Rochester Gas & Electric Corporation) and the New York Power Authority. The total electric generating capacity of the State is approximately 32,000 megawatts (MW), of which 53 percent is oil-fired and 13 percent is coal-fired. The remainder is either nuclear, hydro, or gas turbines used for peaking power.

Electric energy use in New York State was 129,000,000 megawatt-hours (MWh) in 1986, and it is estimated that usage will increase by 15 percent or more by 1995. This additional energy will be supplied mainly by nuclear units and by increased oil burn at existing stations. Coal-fired generation is presently base loaded and will not increase by 1995. Depending on availability and transmission line capacity, some oil burn will be offset by imports of electricity from Canada and purchases from independent power producers, but the amounts are uncertain at this time.

The electric utilities in New York represent the preponderant use of boiler fuels in New York State, since there is a relatively low level of heavy industry in the State.

Estimates of Tax Burden

H.R.2497 will add a burden to the electric customers of New York State that is greater than $400 million per year, based on 1986 emissions data. A breakdown of costs by companies shows that the most affected electric customers are those of the Long Island Lighting Company, Niagara Mohawk Power Corporation, and New York State Electric & Gas Corporation.

Estimated Tax/Year ($ Millions)

	SO_2	NO_x
Central Hudson Gas & Electric Corp.	27	No Tax
Consolidated Edison Co. of N.Y., Inc.	No Tax	No Tax
Long Island Lighting Company	108	No Tax
New York Power Authority	No Tax	No Tax
New York State Electric & Gas Corp.	102	14
Niagara Mohawk Power Corporation	120	9
Orange & Rockland Utilities, Inc.	No Tax	2
Rochester Gas & Electric Corp.	33	1
	390	26

GRAND TOTAL - $416 million/year

Other Considerations

H.R.2497 provides for a trust fund to purchase equipment to reduce emissions. There is no provision for the use or return of taxes if a unit reduces emissions by fuel switching. The most economic method of sulfur reduction in New York State is by fuel switching and not by equipment installation.

During the period of 1968 to 1986, the New York electric utilities have reduced their annual SO_2 emissions from 836,000 tons to approximately 400,000 tons. Existing State law will drop the present SO_2 emission rate even lower by 1988.

The electric utilities of New York State have incurred significant increases to the cost of power generation due to this continuing switch to lower sulfur fuels. Accordingly, they should not be forced to pay for the costs of other states' sulfur emission reduction efforts which this bill would mandate through its tax program.

J.H. Roskoz
Vice President
Public Affairs

Testimony of David Gardiner
Legislative Director
Sierra Club
Before the House Ways and Means Committee
Regarding H.R. 2497 and H.R. 2498
September 9, 1987

My name is David Gardiner, Legislative Director for the Sierra Club, an environmental organization with 410,000 members nationwide. The Sierra Club thanks the Committee for the opportunity to testify today.

My testimony today focuses on the two proposals by Representatives Gregg, Downey, and Frenzel to tax sulfur dioxide and nitrogen oxide emissions. The Sierra Club strongly supports both H.R. 2497 and H.R. 2498. We applaud the authors for their creative efforts to seek new solutions to our environmental problems.

Both of these pollution tax proposals will make an important step in ending the chemical warfare which the polluters are waging on the health and safety of all Americans. It's time to make the polluters pay for pollution, not the American public. And while neither of these proposals is a complete substitute for a regulatory program to reduce these pollutants, they will provide measurable environmental benefits while raising additional revenues to shrink the federal deficit. By adopting these taxes, the Committee can reduce acid rain and urban smog, and help millions of Americans avoid billions of dollars in air pollution damage.

SULFUR DIOXIDE AND NITROGEN OXIDES HURT PEOPLE

The American public is paying a massive price for the 50 million tons of sulfur and nitrogen oxides which polluters shoot into our atmosphere each year. Indeed, health experts have labeled acid rain the third leading cause of lung disease in this country, trailing only active and passive cigarette smoking. The American Lung Association now estimates that air pollution, including sulfur dioxide and nitrogen oxides, now causes between $15 and $40 billion each year in human health costs, including death, illness, lost work days and increased medical costs.

Sulfur dioxide and nitrogen oxides aggravate human respiratory illnesses. Small particles of these pollutants can lodge deep within the lungs and cause bronchial irritation and breathing problems. Senior citizens, children, pregnant women, as well as those with existing lung or heart problems are particularly at risk.

The Congressional Office of Technology Assessment (OTA) determined that airborne sulfate pollution -- a derivative of sulfur dioxide -- causes approximately 50,000 premature deaths each year. Researchers in Canada have now clearly documented increased hospital visits during periods of elevated sulfur dioxide pollution.

Nitrogen oxides are also a prime component of ozone or "smog" -- the nation's most pervasive air pollution problem. More than 70 million Americans still breath unhealthy levels of urban smog and will continue to do so until emissions of nitrogen oxides and other pollutants are reduced.

SULFUR DIOXIDE AND NITROGEN OXIDES CAUSE ACID RAIN

In study after study, sulfur dioxide and nitrogen oxides have been fingered as the cause of acid rain which is wreaking widespread damage across the North American continent. Indeed, just last year, President Reagan, a skeptic on acid rain, agreed with Canadian Prime Minister Brian Mulroney that man-made air pollution is causing acid rain, which is damaging the environment in the United States and Canada.

And while damage from acid rain is well-documented in the Northeast and upper Midwest, acid rain damage is now found in virtually every region of the country. Here are just a few examples:

* Florida has 677 acidified lakes, more than any other state in the country. Rainfall in the state is ten times more acidic than normal.

* Rainfall in Texas is ten times as acidic as normal, and now threatens the state's timber resources in the eastern part of the state.

* Acid fog in California has been measured at pH of 1.7 or more than 8,000 times more acidic than normal rainfall.

* In Colorado, acidity of rainfall has increased substantially and particularly threatens high altitude lakes in the Rockies.

The Gregg-Downey-Frenzel legislation would tax these deadly chemicals, with the dirtiest polluters paying the highest tax of $.45 per pound. Operators of these polluting facilities would have an incentive to clean up these emissions. According to studies done by the Congressional Budget Office and the Office of Technology Assessment, it would be reasonable to anticipate reductions of between six and ten million tons in sulfur dioxide, provided that utilities are not able to simple pass on the costs of this new excise tax to their ratepayers.

This level of pollution reduction would go a long way to providing the kind of relief to America's health and environment that the scientific community has been recommending. The National Academy of Sciences urged five years ago that a 50% reduction -- or fully 12 million tons of sulfur dioxide annually -- be made to protect the environment from acid rain.

If anything, the tax rates proposed in the bill are too low. According to the utility industry, the costs of pollution reductions under an acid rain control program of similar magnitude are approximately twice the costs assumed in the Congressional Budget Office study supporting the Gregg-Downey proposal. The Committee could easily consider doubling the rate charged under the Gregg-Downey bill for both sulfur dioxide and nitrogen oxides. Based on the industry estimates, this would produce the same level of pollution reductions called for under other regulatory-style acid rain bills, but would generate twice as much revenue.

In its discussion of the this proposal, the staff of the Joint Committee on Taxation raised three possible arguments against it. They said that it could:

* raise domestic manufacturing costs, making it more difficult for U.S. producers to compete in international and domestic markets;

* require costly monitoring of emissions or fuel content to calculate tax payments;

* discourage the use of high sulfur coal, adversely affecting the high-sulfur coal industry of the Midwest and Appalachia.

First, while it is true that the costs of domestic manufacturing might be raised by the imposition of this tax, it should not be more difficult for domestic producers to compete in the international marketplace. The United States is virtually alone in the industrialized world in failing to control the pollution which causes acid rain. If we are maintaining a trade advantage today through lower manufacturing costs, it is only by forcing the American public to pay the price of breathing unhealthy air and damage from acid rain.

Moreover, our competitors in the international trade market are already investing in pollution control. Canada has adopted a program to reduce its sulfur dioxide emissions by 50% by the year 1994. West Germany, one of our fiercest competitors in the international trade market, will by the end of this year install scrubbers on every coal-fired power plant in the country. Most other industrialized nations have already signed an international pledge to reduce emissions of sulfur dioxide by at least 30% by 1993, including: Canada, West Germany, France, Sweden, Norway, Denmark, Finland, the Netherlands, Austria, Switzerland, Belgium, Luxembourg and Liechtenstein, East Germany, the Soviet Union, and Bulgaria.

Second, according to the Congressional Budget Office Study of pollution tax systems, the administrative costs for taxpayers for this program should be small. All of these facilities must presently file similar information with various government agencies responsible for air pollution control. It is simply a matter of converting this information for use by the Internal Revenue Service.

Finally, a simple bill to tax emissions of sulfur dioxide and nitrogen oxides will raise the price of fuels with high content of these pollutants and discourage their use. But the Joint Committee staff fail to point out that this will also create a corresponding incentive to increase the use of fuels with lower sulfur and nitrogen contents, such as low sulfur coal, oil, and natural gas. And the Joint Committee also failed to note that both H.R. 2497 and 2498 create a loan program which is, in part, tailored to encourage investment in pollution control equipment. This measure will minimize any possible impacts in fuel markets.

A sulfur and nitrogen oxide tax proposal could easily be structured to offer greater protection to the high sulfur coal industry. Indeed, both Representatives Gregg and Downey joined the Sierra Club several years ago in supporting an acid rain control proposal which would have protected the high-sulfur coal industry. Unfortunately, the bill was killed in large part by the lobbying of the group that would have benefited most under the proposal -- the high sulfur coal industry.

The Sierra Club strongly urges the Ways and Means Committee and the House of Representatives to adopt taxes on both sulfur dioxide and nitrogen oxide pollution. We look forward to working with you to help accomplish your goal of increasing federal revenues, while providing substantial benefits to society.

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